School of Psychology

A Test of the Moderating Effects of Emotional Labour on the Job Demand-Control-Support Model: A Study of Metropolitan Police Officers in Thailand

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DECLARATION

To the best of my knowledge and belief this thesis contains no materials previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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ABSTRACT

A sample of 816 metropolitan police officers in Thailand completed a survey consisting of a set of job characteristics, including job control, support, and job demands, in addition to measures of emotional labour (surface acting and deep acting), and a set of psychological outcomes, to test a proposition based on Karasek and Theorell's (1990) model. It was argued that the emotional labour requirements of police officers would act as a moderating factor that would impact adversely on their wellbeing. The survey instruments were translated and back-translated from the original English to Thai, and their psychometric properties were assessed through confirmatory factor analysis. Tests based on validation and cross-validation procedures indicated that the measurement model was valid and reliable. The effects of job characteristics on wellbeing were assessed through canonical correlation and hierarchical moderated multiple regression analyses. Results revealed that deep acting was inversely related to wellbeing, and had a moderating effect on the relationship between job demands and wellbeing/psychological distress. A moderating effect was also detected for surface acting on the relationship between co-worker support and wellbeing. Neither surface acting nor deep acting had a moderating effect on the relationship between job control and wellbeing/ psychological distress. Implications of the results and recommendations for future research are discussed together with methodological limitations of the study.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

Introduction

Occupational stress and wellbeing at work has been widely recognised as a major issue for concern in all categories of work. Occupational stress indiscriminately affects people in all areas and at all organisational levels. It is a major health problem of working people in industrialised and developing countries, affecting not only individual organisations but also the economies of those countries. The Quality of Working Life Research Project conducted by Comcare Australia (Johns, 1995) found that for those in Commonwealth employment, stress-related claims had dramatically increased since 1992, and have become the third most costly category of workers' compensation claims after back injuries and strain. The causes of occupational stress have been investigated by several researchers. As a result, the issue of how to eliminate stressors in the work environment has become the main focus of considerable research activity.

The present chapter aims to introduce the research problem and to explain the significance of the study. It begins with a statement of the problem followed by an explanation of the objectives and the need for the study.

Statement of the problem

During the last two decades, there have been major changes in the composition of the workforce, globally. The distribution of employment has shifted away from agriculture and industry into the services sector (Lewig & Dollard, 2003). The shift from a manufacturing economy to a service economy is the consequence of "servicization", which is seen as a natural by-product of industrialisation (De Castro, Agnew, & Fitzgerald, 2004), since all manufacturing activities require the service industries to act as channels for the delivery of goods and products to customers. As shown in Table 1, the world labour force in agriculture and manufacture has been steadily declining, while a perceptible increase has been occurring in the services sector. Even though the growth of the manufacturing sector may be found in some developing countries such as Thailand, the growth of the services sector has been far more rapid. This claim is supported by a report (Ellis, 1995) that documents the changes in economic activity worldwide. The report showed that the service sector has been significantly increased since the 90s, whereas agriculture and manufacturing sector have been steadily decreased.

Table 1.1

Percentage Change in Labour Force, Based on Three Broad Sectors of the Economy

	Agriculture			Manufacturing			Service		
	1995	2005	%	1995	2005	%	1995	2005	%
Australia	5.7	4.7	-17.5	19.0	19.7	3.6	75.3	75.6	0.4
Thailand	55.7	45	-19.2	16.9	19.7	16.6	27.4	35.3	28.8
UK	2.3	1.4	-39.1	25.8	19.7	-23.6	71.9	78.9	9.7
USA	3.1	2.0	-35.5	21.1	19.2	-9.0	75.8	78.8	4.0
The world	5.0	4.0	-20.0	34.0	28.0	-17.7	61.0	68.0	11.5

Source: Adapted from Britannica World Data (Sparks, 1996, 2006).

The changes occurring in the work domain have influenced the new characteristics of labour. In the past, the majority of workers were engaged in the agriculture and manufacturing sectors, which emphasized physical exertion as the main job demand. The work features of service jobs, by contrast, focus on interpersonal contact, requiring high levels of emotional demands in order to accomplish the job. Emotional regulation, or emotional labour, has now become the essential job qualification for interactive service work (Lewig & Dollard, 2003), replacing physical job demands as the primary job requirement.

Rather than physical job demands, emotional labour has been identified by several researchers as one of the stressors in service industry occupations (e.g., A.A. Grandey, 2003; Hochschild, 1983; Mann & Cowburn, 2005). The notion that service work may indeed be harmful to employees' wellbeing has prompted research to be carried out on emotional labour issues, particularly on service jobs with high levels of work stress. Consequently, researchers and practitioners have paid more attention to identifying the effect of emotional labour on employee wellbeing and mental health. Hochschild (1983), who firstly defined emotional labour as "the management of feeling to create a publicly observable facial and bodily display" (p.7) argued that emotional labour was stressful and led to burnout. Recent research by Mann and Cowburn (2005), who surveyed nurses working in mental health units, supported these claims. They found that emotional labour was positively related to the daily stresses experienced by nurses.

Traditionally, there was an assumption that workers in service jobs operated within a "safe" work environment, meaning that they encountered less hazardous work than those in the agricultural or manufacturing setting. More specifically, job duties within the service industries were often considered less straining to health and wellbeing because of the images of activities in which these workers engaged in. Consequently, because of this misconception, the risks associated with the experiences of workers within the services sector were overlooked for many decades. More recently, however, the idea of emotional labour is being increasingly acknowledged, and researchers have started to pay attention to the reciprocal and multidimensional relationships between emotional labour and psychological outcomes within the working environment. In order to expand research in this area, the present study will attempt to explore the effects of emotional labour on service job holders engaged in high stress occupations such as police work, which has been shown to be one of the most stressful jobs (Anderson, Litzenberger, & Plecas, 2002).

The researcher will develop a model explaining the effects of emotional labour on the relationship between job features and psychological outcomes (presented in Chapter II) in order to address some of the limitations of previous research in this area. The model is largely based on that developed by Karasek and Theorell (1990), which makes predictions on how certain job features, such as job demands, decision latitude, and social support, impact individual wellbeing. The model by Karasek and Theorell mainly focused on the physical requirements of jobs primarily within the manufacturing sector (i.e., blue collar job classifications), and although the model was appropriate for manufacturing jobs it may not be appropriate for service jobs, which require high emotional demands. To eliminate the deficiency in the original model, the concept of "emotional labour, as operationalised by Grandey (2000), will be introduced in the present model.

Objectives

In general terms, the present study is an attempt to achieve three major objective: to examine the psychometric properties of a questionnaire consisting of items relating to job features, emotional labour, job satisfaction, and psychological wellbeing for its utility among Thai police officers (the population of this study); to create a new model explaining the effects of emotional labour as a moderator between job features (job demand, job control, social support) and psychological outcomes (occupational stress, job satisfaction and affective wellbeing); and to advance research in Karasek's job demand-control-support model by focusing on a service occupational group, such as police officers, rather than a manufacturing job. The results are expected to contribute to an understanding of the effects of job features and emotional labour on individuals' wellbeing, so that it may be applied by practitioners for preventive interventions in order to moderate stressors within the police workplace.

The Need for the Study

In recent decades, the services industry has replaced agriculture and industrial manufacturing as the dominant form of global business. As a result, the world workforce has dramatically shifted from manufacturing to the services sector, especially in developed countries such as United States of America, United Kingdom, and member countries of the EEU (Sparks, 1996, 2006). Unlike manufacturing jobs, service industry occupations require the expenditure of emotional labour as an important role requirement for the job rather than physical exertion. "Emotional labor" is the act of managing and modifying emotions as part of the work role and is sold for a wage (Hochschild, 1983). The main characteristics of jobs involving emotional labour contain the following: a requirement for face to face or voice to voice interaction with the public; a demand for the employee to create/display the required emotions to the client; and allowing the employer, through training and supervision, to exert a degree of control over the emotional activities of employees (De Castro et al., 2004). Since the nature of service jobs mostly involves interpersonal contact with customers, it is sometimes necessary for service workers to deal with angry, hostile, or uncooperative customers. These interactions can be a source of emotional exhaustion leading to negative psychological outcomes such as job stress and burnout, in stark contrast to the long-held view that service workers have better work conditions and healthier work environments than those in manufacturing jobs, and they would experience less harm and work pressure. Recently, this perception has been gradually eroding. Service jobs are no longer considered "safe" anymore. Several studies have demonstrated that service jobs are associated with work-related stress as much as any other kind of job (Brotheridge & Grandey, 2002; Morris & Feldman, 1997; J. Schaubroeck, 2000).

Also, during the last decade, more organisations, not only in business but also in the government sector, have increasingly adopted the label of the "service oriented organisation" by treating internal clients and co-workers the same way as external customers (Liu, Perrewe, Hochwarter, & Kacmar, 2004). Government organisations, which once ignored the necessity of giving good service to other employees across various functions within the same department, nowadays are encouraging employees to treat other fellow employees with whom they have contact as if they were customers. In light of these changes in work requirements, issues of emotional labour take on a universal character that needs to be addressed through additional research (Brotheridge & Grandey, 2002; Morris & Feldman, 1997). Even though there is a significant amount of theoretical and empirical research on the conceptualisation of emotional labour, the findings from these studies are still limited in terms of their applicability and power of generalisation. This is because most previous studies focused on the impact of emotional labour on the psychological wellbeing of service workers in business, hospitality, and healthcare settings.

Prior to 2006, only a few studies examined the relationship between emotional labour and psychological wellbeing by focusing on bureaucratic jobs such as police officers or military personnel (Glomb & Tews, 2004; Morris & Feldman, 1997). Police work, which is considered to be one of the most stressful jobs regarding physical and psychological wellbeing, and as having the lowest levels of job satisfaction (S. Johnson et al., 2005), involves high levels of both physical exertion and emotional labour as an essential part of its job requirements. For example, police officers are frequently required to work in potentially harmful and unstable situations, but they are required to appear completely calm and in control at all times. This job requirement is clearly relevant to the experience of work related stress (Zapf, 2002). The main objective of this study is to expand past research by developing a model that aims to explain the effects of emotional labour within a hierarchical work setting such as the police force. A further objective of this study is to examine the generalizability and utility of the model in the context of Thailand. Since most research on emotional labour has been conducted in Western countries, especially in the USA, the lack of substantial research in a developing country within the Asian region is obvious. To highlight this point, the researcher found that during the period 1995-2006, from the 200 studies which were published in international journals that dealt with emotional labour (based on the search from electronic databases -- Proquest 5000, Science Direct, Taylor & Francis Online Journals and Wiley InterScience), less than 3% of those studies were conducted in Asian countries (Anita Kit-wa, 2004; Chung, 2004; Pei-Chia, 2002; "Taking a call on emotional labour"2005; Tan, 2005) and none of them were in a bureaucratic work setting.

Given the fact that the workforce has also shifted to the service industry in Asian countries, such research is warranted in this region.

The findings from the present research will significantly contribute to the management of wellbeing within government organisations particularly in Asian countries where there is limited knowledge on matters relevant to emotional health. Employees who experience long-term emotional dissonance as a part of their job requirements may suffer high levels of stress and contribute to their psychological and physical wellbeing. The effects of stress impact adversely not only on the individuals, but also on organisations and these can be measured in monetary, medical, and social terms. It is hoped that the results from this study could be used for the implementation of interventions in order to moderate stressors in the workplace.

Overview of thesis content

Chapter 2: Background and review of the literature, beginning with an introduction of the original approaches and models from previous theorists, followed by a review of relevant research and studies and meta-analyses, as the first step in the development of a new model. The final part of this chapter explains the significance of this study.

Chapter 3: Methodology; explains the sampling methods and instruments used in this study.

Chapter 4: Measurement Model; gives a detailed account of the statistical procedures associated with the testing of the measurement models for all constructs associated with the study.

Chapter 5: Outcomes; gives a comprehensive description of the results and explanations.

Chapter 6: Conclusions; discusses the conclusions related to the study hypotheses with a summary of the results. Also, the limitations and implications of this research are provided at the end of this chapter.

CHAPTER II

Literature Review

Introduction

The study of the relationship between work and wellbeing began in the 20s (1924-1927) at the Western Electrical Plant at Hawthorne, Chicago (Roethlisberger & Dickson, 1939), when the idea of the workers' need for emotional support in the workplace was first identified as an important job feature by Elton Mayo and his associates. These studies indicated that employees' job satisfaction and productivity were positively related to the interpersonal relationships within the work group, more so than the physical working environment or incentives such as money. The researchers argued that the feelings of belongingness and job involvement motivated workers to reach higher levels of productivity which was associated with higher levels in job satisfaction. These studies challenged the long-held assumption, based on Taylorist principles, which argued that workers work primarily for money and will rationally choose to do that which provided them with the greatest personal economic gain.

During the 50s and 60s several researchers confirmed these results and expanded their research to encompass other aspects of the psychology of work (e.g.,Argyris, 1957; Brayfield & Crockett, 1955; Herzberg, 1966; Katz, 1964; Likert, 1961; Maslow, 1943; McGregor, 1960; Trist & Banford, 1951; Vroom, 1964). Their research contributed to the emergence of many new concepts that explained the impact of psychological stressors on individual wellbeing and mental health (Kornhauser, 1965). However, most of these earlier studies focused on blue-collar employees who were primarily engaged in the manufacturing sector, which was representative of the global workforce at the time. More recently, however, there has been a major change in the occupational classification of the workforce globally, which coincided with the development of the tertiary sector in the economies of nations. One observation that has arisen from this change in the working environment of workers is the importance of emotions in the workplace and the role they play in shaping the attitudes and overall wellbeing of the workforce. Since the majority of the world's business activity shifted from agriculture and manufacturing into the service sector, the issue of emotional labour has received due attention from many quarters.

The present chapter presents a review of the studies that have been carried out in this area. The chapter begins with a discussion of the meaning of emotional labour, followed by a theoretical and an empirical background to the literature on emotional labour.

This chapter also presents a review of studies that explore the impact of emotional labour and relevant factors on the individual's psychological outcomes. This is followed by a quantitative meta-analysis based on studies that indicated the effects of emotional labour on workers' wellbeing.

As the major focus of the study is the impact of emotional labour on the wellbeing of police officers, a section of this chapter is dedicated to a discussion of the concept of emotional labour as a job requirement in police work, with reference to the relationship between police job characteristics and psychological outcomes. The chapter concludes with a summary of the main issues that arose from the review.

The Meaning of Emotional labour

The effects of social tensions unavoidably impact the workplace, especially in service jobs for which interpersonal contact is a major requirement (Johns, 1995). People working in this kind of job have to control their emotions in order to meet the organisational standards for the appropriate expression of emotions. Since the subject of emotion in the workplace has become of great interest to theorists and practitioners, several studies of emotional labour have investigated its process, causes, and effects. As a result, many definitions of emotional labour were introduced by many researchers. Even though there were a significant number of researchers who introduced a definition of emotional labour, these definitions were essentially based on the four following approaches.

Hochschild (1983) was one of the first researchers who identified the issues of emotions in the workplace. The characteristics of jobs involving emotional labour were as follows: requiring face to face or voice to voice contact with the public, demanding the employee to create/display the required emotions to the counterpart; and allowing employers, through training and supervision, to exert a degree of control over the emotional activities of employees (De Castro, 2003; Hochschild, 1983). Hochschild defined emotional labour as "the management of feeling to create a publicly observable facial and bodily display" (p.7). The term 'emotional labour' was introduced to describe employees' telic attempts to express required emotions at work as part of occupational demands, in spite of their genuine feelings, in exchange for remuneration (Liu et al., 2004). Hochschild explained the process of emotional labour by referring to display rules originally described by Ekman (1973, cited in Morris & Feldman, 1996a, p. 988) as "standards of behaviour that indicate not only which emotions are appropriate in a given situation, but also how those emotions should be conveyed or publicly expressed". Therefore, display rules were considered a process of emotional labour with varying levels of involvement characterised by "deep acting" (managing of feeling) and "surface acting" (controlling the expression).

Ashforth and Humphrey subsequently defined emotional labour as "the act of displaying the appropriate emotions" (1993, cited in A.A. Grandey, 2000, p. 97). According to this definition, they re-conceptualised Hochschild's original notion of emotional labour to mean the process of internal controlling. They noted that in order to perform organisationally required emotions, controlling observable behaviours was more important than managing inner feelings, because it was appropriate emotional displays that were organisationally desired and evaluated by management. In other words, external observable behaviour (i.e., that which is displayed), rather than internal emotional experience (i.e., that which is felt), was the main focus of the emotional labour construct. Ashforth and Humphrey also contradicted Hochschild's idea that the performance of emotional labour needs an effort. They argued that because of the repetitive nature and routine of many service roles, service providers were likely to perform emotional labour effortlessly, thus causing minimal psychological strain to them. This claim was later supported by some researchers and theorists (Diefendorff & Grosserand, 2003; Lord & Harvey, 2002; Pugh, 2002).

In 1996, Morris and Feldman presented a further perspective on emotional labour developed from the previous frameworks proposed by Hochschild (1983) and Ashforth and Humphrey (1993). They defined emotional labour as "the effort, planning, and control needed to express organisationally desired emotion during interpersonal transactions" (Morris & Feldman, 1996a, p. 987). To explain the process of emotional labour, they conceptualised emotional labour as having four distinct dimensions (see Figure 2.1): the frequency of emotional display; the attentiveness to required display rules; the variety of displayed emotions; and, emotional dissonance. In term of attentiveness to required display rules, they suggested that it consisted of the duration of emotional display representing the length of time which employees interact with customers and the intensity of interaction referring to how strongly an emotion is expressed during the interaction (Morris & Feldman, 1996a). The intensity of interaction was explained by reference to the concept of surface and deep acting by Hochschild (1983). They argued that because deep acting relates to controlling an emotion by changing one's original thoughts and perceptions, it requires more effort than surface acting, which involves only controlling facial expressions. Therefore, higher intensity of emotional display would be found in employees who perform deep acting rather than surface acting.

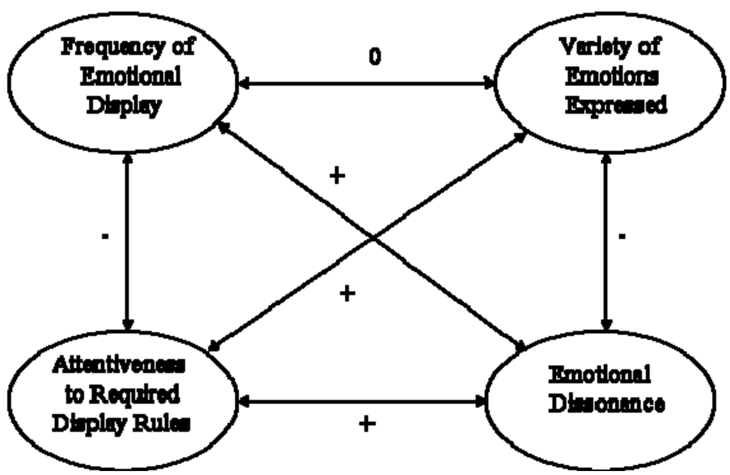

Figure 2.1. Four dimensions of emotional labour
(Source: Morris & Feldman, 1996a)

In agreement with Hochschild's and Ashforth's and Humphrey's position, regarding the effect of external factors on emotional labour, Morris and Feldman (1996b) claimed that a key component of work performed by many workers has been the presentation of emotions that are specified and desired by their organisation. The justification for this claim is that employees learn how to display appropriate expressions through their understanding of social expectations on a given situation which they were experiencing. Therefore, the expression of emotions was constructed by social environments based on organisational norms. They also agreed with Hochschild's original concept that emotional labour requires effort, and employees perform the organisationally required emotions in order to exchange these for pay. However, consistent with Ashforth's and Humphrey's position, rather than focusing on the management of feeling (as suggested by Hochschild, 1983), they focused on observable behaviours, which they considered a key component of job demands in the service industry.

The last definition of emotional labour referred to in the present study was introduced by Grandey (2000) who claims that emotional labour is operationalized as the process of regulating both feelings and expressions for organisational goals. Grandey conceptualized emotional labour by integrating emotional regulation theory with both the internal management of feeling (deep acting) introduced by Hochschild (1983), and the resulting observable behaviours (surface acting) introduced by Ashforth and Humphrey (1993). On the other hand, she disagreed with Morris and Feldman applying the four dimensions referred to earlier to define emotional labour. She claimed that their argument was circular, and the four dimensions should be used to explain the job characteristics which contribute to the situation influencing emotional labour (i.e., causes of emotional labour) rather than be used to explain the process of emotional labour.

The following section presents a review of major theoretical and empirical developments in the area of emotional labour.

Background on Emotional labour

The dramatic changes in the economic development of nations, and the resultant shift in occupational service classifications, as a major percentage of the total workforce, has been causing changes in the way work is carried out. Service industries have now become the major employers in most parts of the world. Today, work environments have become more competitive in the sense that the most successful businesses are the ones that give “the best service”. As a result, management has now begun to focus more on how interpersonal transactions impact organisational success (Diefendorff & Richard, 2003), while increasing attention has been given to the role that emotions play in a variety of work settings (Ashforth & Humphrey, 1993; Wharton, 1993). Because the way employees interact with customers can affect important outcome variables (e.g., increases in sales, customer satisfaction, etc.) expressing organisationally required emotions has become an important part of service roles. The concept of emotions in the workplace has been the subject of substantial research during the last decade (Ashforth & Humphrey, 1993; A.A. Grandey, 2000; Hochschild, 1983; Morris & Feldman, 1996a), and four main perspectives have emerged. These will be presented in chronological order (Ashforth & Humphrey, 1993; A.A. Grandey, 2000; Hochschild, 1983; Morris & Feldman, 1996a).

Hochschild’s (1983) Perspective

Arlie Russell Hochschild was one of the earliest theorists who dealt with the subject of emotion in the workplace, and sensitised researchers of the need to focus their attention on this area of study. In her book “The managed heart: The commercialization of feeling” (1983), she introduced the term “emotional labour” to explain the effort required by service workers to exhibit emotions and expressions required by their organisation in exchange for their wage. The concept of emotional labour refers to the quality of interaction between employees and their clients. The term 'client' has been frequently used in the study of emotional labour to refer to any person who interacts with an employee, as for example, patients in a hospital, children in day centres, customers in a retail environment, airline passengers, or guests (Zapf, 2002). According to the perspective adopted by Hochschild, the key to achieving organisational goals is through service workers' abilities to manage their feelings and expressions as part of their daily work. She argued that in everyday situations, people basically play roles and try to create a favourable impression on others during an interaction by following social norms. The same rules also apply to social interactions in organisation (Zapf, 2002). Hochschild further argues that in order to achieve organisationally-required emotions and expressions, employees must learn to control their feelings and expressions by using appropriate "display rules". Display rules are defined as behavioural expectations about which emotions ought to be expressed and which ought to be hidden (Rafaeli & Sutton, 1989). Emotional labour is performed through two main channels: *surface acting* and *deep acting*. Surface acting occurs when emotions are faked, unfelt, or suppressed, whereas deep acting occurs when emotions are modified so that they are congruent with the expressed emotions, resulting in a genuine emotional display (Diefendorff, Croyle, & Gosserand, 2004). Both surface and deep acting are considered strategies that individuals apply when they are unable to spontaneously display their genuine emotional expression during interaction. The difference between deep acting and surface acting is that surface acting focuses on pretending and controlling the facial expressions without changing the true feelings, while deep acting aims at adjusting one's emotions in order to have the true feelings congruent with the desired expression (De Castro, Curbow, Agnew, Haythornthwaite, & Fitzgerald, 2006).

Another highlight of Hochschild's perspective is the concept of "inauthenticity", which occurs when employees are frequently forced to express feelings that they are not actually feeling, or suppress truly felt emotions. For example, shop assistants are required to hide their anger towards annoying customers and become "artificially friendly". Hochschild claimed that the long-term experience of inauthenticity would result in detachment from one's true feelings and from others' feelings. Inauthenticity, particularly relevant to surface acting, is a consequence of emotional dissonance. Hochschild (1983) defined emotional dissonance as a state where the emotions expressed are discrepant from the emotions felt. She also noted that emotional dissonance has negative consequences on individuals' wellbeing, and results in problems such as absenteeism, and drug and alcohol abuse. Although, Hochschild's hypotheses were not systematically investigated by researchers during the eighties, as Rafaeli and Sutton (1990) found, more recently there were several studies which investigated the effect of emotional labour on the health of individuals. Recent research has showed that long term emotional dissonance would have a negative effect on an individual's psychological and physical health, such as psychosomatic symptoms, alcohol abuse, and burnout (Ashforth & Humphrey, 1993; Erickson & Ritter, 2001; A.A. Grandey, Fisk, & Steiner, 2005; Karl & Peluchette, 2006; Pugliesi, 1999; Wharton, 1993; Zapf & Holz, 2006).

Ashforth & Humphrey's Perspective

Ashforth and Humphrey's (1993) framework is consistent with Hochschild's original idea, but they argued that the importance of emotion management, as an internal process of emotional labour mentioned in Hochschild's study, should be of less importance. Instead they claimed that behaviour, rather than emotion, was the key component of the emotional labour construct (De Castro, 2003). As a result, rather than focusing on emotion, Ashforth and Humphrey were more interested in investigating the factors influencing an employee's external behaviour, such as behaviour that stems from occupational, organisational, and social norms. They noted that external behaviour based on display rules could be modified by cultural or societal factors, such as power or status differentials, or vary between employees and service recipients. For instance, the approach during service transactions between service providers and their customers would be different depending on whether the service provider has a high level of personal authority (e.g., law enforcement), or low levels of authority (e.g., shop assistants or waitresses). That is, the greater the power status accorded to the service agent, the greater the level of control of his/her own feeling, and the lower the demand for the expression of display rules.

Ashforth and Humphrey (1993) further integrated social identity theory with their perspective on emotional labour. Social identity develops when an individual justifies his or her social identification by adopting the group characteristics to which he or she belongs (De Castro, 2003). Ashforth and Humphrey argue that when service workers identify themselves in line with their occupational classification, they adopt those characteristics of the service role and the associated occupational norms. This process leads to "self-stereotyping" and depersonalisation of the self. As a consequence, the more the service worker willingly embraces an occupational norm, the more positive the impact on that individual's job performance (i.e., facilitating authentic self-expression, identity enhancement, and willingness to comply with displays rules), and the less negative impact on the individual's wellbeing (i.e., emotional dissonance, and self-alienation).

Morris and Feldman's Perspective

Aimed at extending the earlier theoretical approaches to emotional labour (Ashforth & Humphrey, 1993; Hochschild, 1983), Morris and Feldman (1996a) introduced their model of emotional labour (see Figure 1), as well as its antecedents and consequences. Interestingly, even though their perspective was basically consistent with that of Honchschild's, the roles of surface acting and deep acting were left out, and only mentioned as a minor aspect of emotional labour, and given the label of "intensity of interaction". Their original framework, published in 1996, argued that instead of generally describing emotional labour as an elusive phenomenon, emotional labour could be conceptualised as consisting of four dimensions: a) frequency of emotional display, b) attentiveness to required display rules, c) variety of displayed emotions, and d) emotional dissonance. According to this model, the more dimensions are involved in a person's affective experience the more emotional labour is being performed. The first three components (i.e., frequency, attentiveness, and variety) were viewed as external factors of labour, whereas the fourth dimension (i.e., emotional dissonance) was regarded as generating internal conflict (Mann, 1999).

Morris and Feldman subsequently reviewed their model and decided to reduce the construct of emotional labour to three dimensions: a) the frequency of emotional display, b) the duration of interaction and c) emotional dissonance (Morris & Feldman, 1997). Contrary to Hochshild's study (1983), instead of considering emotional dissonance as a consequence of emotional labour, they viewed emotional dissonance, which was described as the conflict between displayed emotions and felt emotions, as one of the dimensions of the emotional labour construct. Emotional dissonance was seen as central to the theoretical construct indicating intensity of "labour". In other words, they reasoned that the more an employee experiences conflict between genuinely felt emotions and organisationally desired emotions, the more difficult the regulation of emotional expression. Morris and Feldman further suggested that in order to cover all the complexity of the construct, all components in the model needed to be considered as indicators of emotional labour. For example, as mentioned in their work, frequency of emotional display alone is not enough to indicate the degree to which emotional labour is being experienced, because the dimension on its own may not be able to capture the level of planning, control, or skill required to regulate emotions. Consequently, additional dimensions needed to be taken into consideration to increase the explanatory power of the model. Subsequent research has examined the more complex model (A.A. Grandey, 2000; Mann, 1999). Mann (1999), for example, noted that even though no one component alone fully describes emotional labour, not all components are necessary. In other words, Mann argued that even though not all dimensions are experienced by the service worker, emotional labour could still exist (e.g., bouncers in a night club who have to intervene on certain offending acts by patrons). In this instance, despite the narrowness of the emotional display dimensions, due to restricting the range of expression as part of the job, a high level of emotional labour is still experienced by the worker in such occupations. Morris and Feldman's model was, therefore, modified subsequently by other researchers to take into account these circumstances (A.A. Grandey, 2000; Mann, 1999).

The emotional labour model has undergone various modifications as a consequence of the debate to clarify the meaning of the construct. Mann (1998, p.

257), for example suggested that emotional labour was composed of three components: 1) the faking of emotion that is not felt; 2) the hiding of emotion that is felt; and 3) the performance of this emotion management in order to meet expectations within a work environment.

Another refinement of the theoretical framework was introduced by Morris and Feldman (1997) who were exploring the antecedents and consequences of emotional labour. As mentioned earlier, the construct of emotional labour consists of: a) the frequency of emotional display; b) the duration of interaction; and, c) emotional dissonance. These could be predicted by antecedents such as explicitness of display rules, task routineness, job autonomy, and the power of the role receiver. In terms of explicitness of display rules, they described these as norms learnt by employees in relation to how and when organisationally required emotions should be expressed in public. Therefore, organisations that believe that there is a direct link between employees displaying the required emotions to customers and organisational success, will have explicit display rules to control employees' behaviour. As a result, employees will have to engage in emotional labour more frequently leading to higher level of emotional labour. Task routineness is also another job feature predicting emotional labour. Morris and Feldman argue that employees working in routine service jobs will experience more frequency of interaction in the form of short episodes than employees working in non-routine jobs, where the tasks are more complex requiring longer to perform. As a consequence routine jobs would cause higher levels of emotional labour. Job autonomy defined as "the degree to which an employee has freedom, independence and discretion in carrying out the tasks of the job" (Morris & Feldman, 1996a, p. 999) was viewed as a job feature leading to emotional dissonance. They claimed that employees who have more control over their expressive behaviour will experience less conflict between required emotions and genuine emotions. The last antecedent mentioned in this model is the power of the role receiver. Morris and Feldman proposed that the greater the power of the role receiver over the employee, the greater the frequency of emotional labour and the greater the emotional dissonance. For example, the shop assistants who work at a discount store may be expected to display friendly expression less often than those who work in an exclusive fashion boutique.

In terms of the consequences of emotional labour, Morris and Feldman (1996) argued that the components of the emotional labour construct will be differentially related to various aspects of psychological wellbeing. In their study, they identified two main factors that reflected an individual's psychological wellbeing: emotional exhaustion and job satisfaction. Further discussions about the consequences of emotional labour will be presented in subsequent sections of the thesis.

Grandey's (2000) Perspective

Grandey was the first theorist who introduced the conceptual framework of emotional labour based on the concept of emotion regulation by Gross (1998b). The definition of emotion regulation as "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998b, p. 275) was further developed to explain the process of emotional labour. Integrating the previous models of emotional labour and utilising the general emotion regulation theory, Grandey reconstructed the emotional labour model originally described by Hochschild (1983) and Morris and Feldman (1997). This modified model identifies the antecedences and consequences of emotional labour, and expands the scope of the emotional labour domain to include both individual and organisational aspects, which were neglected in previous studies. For example, Grandey disagrees with Morris and Feldman (1996) in applying four dimensions which include frequency, attentiveness (duration and intensity), variety, and emotional dissonance, to define the emotional labour construct. She proposed that those four dimensions should be used to explain the job characteristics which contribute to the situation evoking emotional labour (i.e., causes of emotional labour) rather than be used to explain the process of emotional labour. Therefore, in her model Grandey treats such dimensions as frequency, duration, and variety as causes of emotional labour.

Similar to Hochschild's original concept, Grandey explained that the emotional labour process was made up of surface and deep acting. In her conceptual framework she extended this idea by identifying antecedent-focused and response-focused strategies in the emotional labour regulation process. In agreement with emotional regulation theory, deep acting is described as a synonym of antecedent-focused emotion regulation comprising attention deployment and cognitive change. Attention deployment is similar to deep acting in terms of the process of emotional management. This approach is applied by the person re-focusing on other situations that illicit the required emotion. For example, a waitress re-directs her thinking and remembers pleasant jokes so that she is able to express the required happy feelings to the customer. Cognitive change is another method to manage the feeling. However, it is different from the former in terms of changing the perception of the situation instead of changing the focus of personal thought. This method involves re-appraising the external situation, so that the emotional impact is lessened. For instance, flight attendants cognitively re-valuate passengers as children so that they do not become angry with passengers over demanding and unreasonable requests (A.A. Grandey, 2000). These types of emotional regulation are the internal processes influencing thoughts and feelings aimed at making the expressions genuine.

Surface acting is another emotional labour process mentioned in Grandey's model. Grandey compared surface acting to response-focused emotion regulation as the process by which the person manipulates the emotional response in order to maintain the required expression that is projected to others. This is achieved by controlling the emotional expression of one's response to the situation, rather than adjusting the situation or the perception of the situation as is the case in deep acting. For example, employees may "mask" their irritation towards over demanding customers with a smile on their face (A.A. Grandey, 2000). In this emotional management technique, the person is required to express more emotion than one actually feels, or to suppress true feelings and show the required expression. In contrast to deep acting, this technique focuses on the observable expression - not the internal feeling.

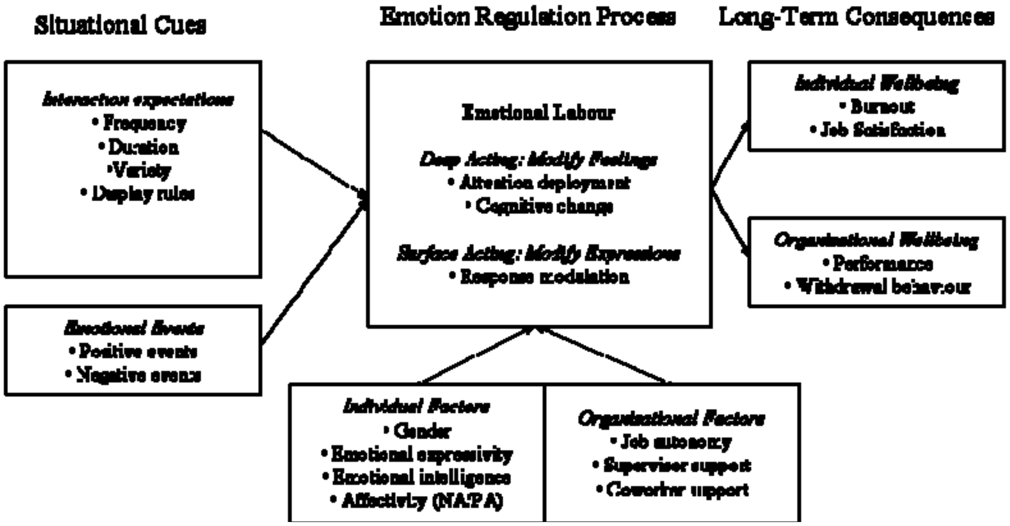

Figure 2.2. Conceptual framework of emotional regulation in work settings.
(Source: Grandey, 2000, p. 101)

In terms of the antecedents of emotional labour, Grandey explained that in the customer service setting, the situation during the service transaction is the key predictor of an individual's emotional labour performance. Her framework contains two categories of situational variables: interaction expectations and emotional events. Integrating the concepts of emotional labour by Hochschild (1983) and Morris and Feldman (1996), Grandey argued that "interaction expectations" are composed of frequency, duration, variety, and display rules of service interactions. Interaction expectations refer to the factors that cause the higher level of emotional labour at the workplace. Grandey (2000) noted that in terms of variety of emotion, her study would mainly focus on the situation in which the individual is expected to express integrative emotions (such as happiness and sympathy) and suppress differentiating emotions (such as anger and unfriendliness). Grandey explained that display rules emerge from organisational expectation and control of employee's emotional expressions during service transaction. It reflects the extent to which an individual perceives that expressing certain emotions required by an organisation is part of the job. Therefore, if employees perceive that the organisation expects certain emotions to be displayed during service transaction, then they may engage in more emotional labour to meet the expectation.

While ‘interaction expectations’ are creating chronic needs to regulate emotion, ‘emotional events’, on the other hand, are creating an acute impact on emotional regulation. The acute events at work have an immediate impact on an employee’s emotions, because they reflect employee attitudes and behaviours during service transaction. The influence of an event on individual wellbeing can be found as either negative or positive depending on the type of event. If the event prevents employees from reaching their goal, which is to express organisational required emotion, the event will be appraised negatively. In other words, if the event requires employees to perform under high levels of emotional regulation in order to maintain the required expression, it may been seen as stressful (Grandey, 2000). On the other hand, less emotional regulation would be required when the event creates a positive emotion which is in accordance with the organisational required emotion.

In order to thoroughly comprehend all aspects of emotional labour, Grandey also suggested that the factors influencing the emotional regulation process such as individual differences and organisational factors should also be taken into account. Individual differences represented by gender, emotional expressivity, emotional intelligence and affectivity were viewed as individual traits that influence emotional labour performance. The research by Diefendorff, Croyle and Gosserand (2005) also supported this idea. They suggested that individual differences may explain the type of emotion regulation strategies employed. Organisational factors referring to job autonomy, supervisor support and co-worker support were considered as work environment factors affecting the emotional regulation process. A lack of these organisational factors associated with emotional labour was claimed as factors contributing to negative psychological health outcomes. The influence of organisational factors on emotional labour and its impact on wellbeing has been investigated in other studies (De Castro, 2003; Dormann & Kaiser, 2002; A.A. Grandey et al., 2005; Lewig & Dollard, 2003; Morris & Feldman, 1997; Pugliesi, 1999; Wharton, 1993). According to these studies, they reported that organisational factors such as job demand, job control and social support associated with emotional labour will affect health and wellbeing. For example, Wharton's finding (1993) supported Hochschild's view that those who performed emotional labour under condition of low job autonomy or high job involvement were more likely to suffer burnout than those who have high job autonomy or low job involvement. Also, the study by De Castro (2003) which investigated the effect of emotional labour on depression and job dissatisfaction among young workers found that job control and social support had a strong positive impact on job satisfaction. He claimed that the negative effects of emotional labour on wellbeing may be lessened so long as a certain degree of job control and social support is given to worker. Similarly, Lewig and Dollard (2003), who explored the effect of emotional dissonance on emotional exhaustion and job satisfaction in call centre workers, found that high job demand associated with high emotional dissonance will significantly increase the level of emotional exhaustion (see Figure 2.3). The study by Morris and Feldman (1997) also reported that the greater the job autonomy, the lower the emotional dissonance. Lower emotional dissonance will consequently cause a decrease in emotional exhaustion and an increase in job satisfaction. In addition, the study by Grandey, Fisk and Steiner (2005) also found that low job autonomy associated with high frequency of emotional regulation will lead to an increase of emotional exhaustion. On the other hand, an employee with low job autonomy who frequently engages in emotional regulation will experience a significant decrease in job satisfaction.

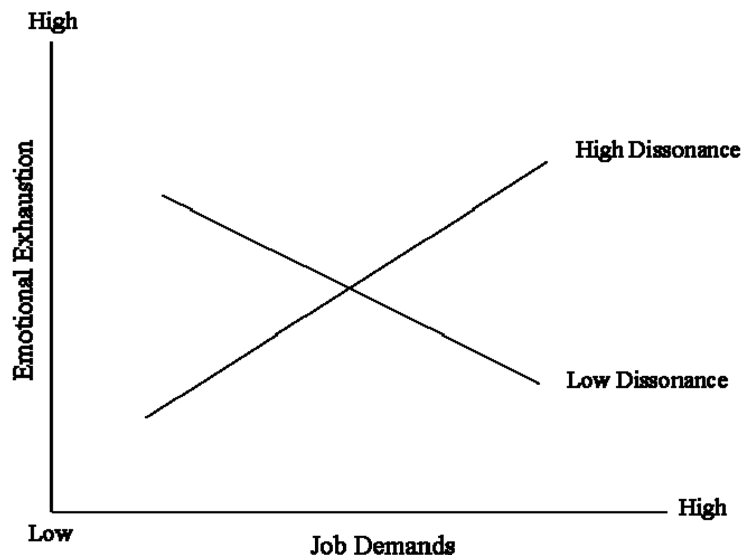

Figure 2.3. Interaction effects of emotional dissonance and job demands on emotional exhaustion (Source: Lewig & Dollard, 2003).

Distinguishing between the two forms of emotional labour (surface acting and deep acting), Grandey's model allows researchers to investigate how these two forms of emotional labour affect individual and organisational wellbeing. Also, conceptualising antecedents of emotional labour in terms of the nature of work and individual characteristics and consequences of emotional labour, allows investigation to be expanded into any moderating effects of emotional labour on individual and organisational wellbeing. Grandey's model appropriately incorporates important factors influencing occupational health in terms of a combination of workplace hazards (e.g., emotional job demands) and risk factors (e.g., working condition).

Because of its comprehensiveness and great explanatory power, the definition of emotional labour and the framework introduced by Grandey (2000) has been adapted for this study.

Consequences of Emotional labour

Employees in service occupations need to learn how to control their emotional display in order to fulfil organisational expectations. Display rules that encompass organisational norms have been used to indicate which emotions are required during interactions, and how these emotions should be expressed. In work settings, employees might have difficulties maintaining the required emotions at all times, and often might experience a mismatch between their true feelings and organisationally required expressions. In the long term, this conflict might affect their psychological and physical health. During service transactions, emotional labour could be experienced in three different ways (Mann, 2004). First, there is the situation where the expression, felt emotion, and display rules all match. This is known as *emotional harmony*. Although in this situation an individual seems to put less effort in performing emotional labour than in other situations, there is still a certain degree of emotional labour required to maintain an emotional display in organisationally appropriate ways (Morris & Feldman, 1996a). Second, is the situation where a match exists between the expression and display rules, but a discrepancy exists between these and felt emotions. This is known as *emotional dissonance*. In this situation, employees are required to perform high emotional labour resulting in dysfunctional psychological outcomes (this is discussed more fully in later sections). Third, there is the situation where there is a match between the expression and felt emotions, but a mismatch with the required display rules. This is known as *emotional deviance*. In this case, employees might not experience internal conflict (i.e., emotional conflict), but they may be perceived as having failed in achieving organisational goals, thus affecting their overall rated job performance negatively.

Ashforth and Humphrey (1993) described emotional labour as a double-edged sword, indicating that emotional labour can provide both advantages and disadvantages to an organisation. Even though several studies showed that constantly experiencing a conflict between felt emotions and expressions can be deleterious to an individual's wellbeing, the benefits of emotional labour have also been found in some studies. The advantages of emotional labour are that it enables employees to be in control during uncertain situations that frequently occur during service transactions, resulting in an increase in task effectiveness and employee self-efficacy. Also emotional labour makes interactions with clients more predictable by allowing employees to maintain consistency in their pattern of responding behaviours (Ashforth & Humphrey, 1993). This claim was supported by Zapf (2002) who explained that emotional labour, as a part of a service job, helps fulfil the requirements of the task, and increases performance effectiveness. In addition, it makes social interactions more predictable by preventing embarrassing situations from occurring that might interrupt the interaction with the client. Moreover, emotional labour may help develop client trust in the organisation by creating stability in the organisation-customer relationship. Performance of emotional labour helps create positive outcomes in terms of job performance and efficiency, such as selling more products, increasing customer satisfaction (Pugh, 2001; Rafaeli & Sutton, 1990; Tsai, 2001; Tsai & Huang, 2002; Zeithaml, Parasuraman, & Berry, 1990), dealing with customer complaints adequately, and ensuring the appropriate response during interactions (Ashforth & Humphrey, 1993; Grandey, 2003;

Totterdell & Holman, 2003). Although emotional labour may lead to positive results, such as high job performance or increases in sales performance, those positive outcomes mainly benefit the organisation, rather than contributing to the employee's health and wellbeing.

Several studies suggest that performing emotional labour negatively affects an individual's wellbeing, especially when the individual experiences high levels of emotional dissonance (Ashforth & Humphrey, 1993; Brotheridge & Grandey, 2002; A.A. Grandey et al., 2005; Hochschild, 1983; Karl & Peluchette, 2006; Mann & Cowburn, 2005; Morris & Feldman, 1996b; Pugliesi, 1999; Wharton, 1993). According to several research findings applying surface acting as an emotional regulation strategy in everyday work settings can lead to negative psychological outcomes. These include: burnout, characterised by increased emotional exhaustion, depersonalization, and reduced personal accomplishment (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2002, 2003; Grandey, 2003; A.A. Grandey et al., 2005; Montgomery, Panagopoulou, de Wildt, & Meenks, 2006; Totterdell & Holman, 2003; Zammuner & Galli, 2005); emotional dissonance (Grandey, 1999; Van Dijk & Kirk-Brown, 2006); emotional estrangement (Grandey, 1999); inauthenticity (Brotheridge & Lee, 2002; Erickson & Ritter, 2001); intentions to resign (Cote & Morgan, 2002; Grandey, 1999); job dissatisfaction (Cote & Morgan, 2002; Pugliesi, 1999); job induced tension (Liu et al., 2004); psychosomatic complaints (Montgomery et al., 2006); resource depletion (Baumeister, Bratslavsky, Mauraven, & Tice, 1998; Brotheridge & Lee, 2002; Mauraven & Baumeister, 2000; Mauraven, Tice, & Baumeister, 1998); stress related physiological arousal (Gross, 1998a, 1998b; Gross & Levenson, 1993, 1997; Richard, 2004; Richard & Gross, 1999); and work-family interference (Montgomery, Panagopoulou, & Benos, 2005; Montgomery et al., 2006).

Ashforth and Humphrey (1993) claimed that interpersonal job demands are related to emotional exhaustion that lead to psychological distress. They argued that when employees constantly experience emotional dissonance, which is the conflict between displayed emotions and felt emotions, this may cause employee depression, cynicism, decrease self-esteem, and alienation from work (Ashforth & Humphrey, 1993). Hochschild (1983) also suggested that continuously expressing emotions that are not actually felt creates stress. If individuals have to exert excessive levels of emotional labour over a long period of time, they tend to experience negative psychological outcomes such as poor self-esteem. She argued that a job that requires a high level of emotional management for organisational purposes would be inherently unsatisfying. In other words, employees who report high level of emotional regulation in their job will have high probability of experiencing low levels of job satisfaction. In her study of flight attendants (1983) she found that the emotional exploitation of flight attendants can lead to drug use, excessive drinking, headaches, absenteeism from work, and sexual dysfunctions. Wharton (1993) also expressed her concern about the negative effects of emotional labour in occupations requiring emotional job demand. She argued that the high requirements of emotional labour can be a source of job-related stress. Consistent with previous studies, Morris and Feldman (1996b) showed that emotional dissonance is positively associated with emotional exhaustion and negatively associated with job satisfaction. Similarly, Karl and Peluchette (2006) reported that emotional labour - through the measurement of its frequency, variety, intensity of emotional requirements, as well as level of emotional dissonance - was positively associated with emotional exhaustion and negatively associated with job satisfaction.

To explain individual wellbeing, Grandey (2000) identified the common features of the various definitions of emotional labour, and incorporated those features into a new model based on the emotion regulation theory (Hochschild, 1983; Morris & Feldman, 1999). Grandey suggested that emotional labour is related to job satisfaction in both positive and negative ways. For example, a monotonous job would be more enjoyable if employees were required to be friendly to customers and allowed to show self-expression. On the other hand, the regulation to achieve that expression may be negatively related to job satisfaction, as for example, employees working in a job that requires them to keep suppressing their real feelings at all times leading to emotional dissonance and to negative psychological outcomes. According to her research findings emotional suppression and emotional faking are positively associated with emotional exhaustion and negatively with job satisfaction (A.A. Grandey et al., 2005).

In addition, a study by Kompier (2003) indicated that high levels of emotional labour led to emotional exhaustion, and increased the impact of job-related stress on psychological health. Similarly, Mann's study of office workers (1998) found that emotional labour has positive associations with stress. The study by Mann and Cowburn (2005) investigated the impact of emotional labour on the wellbeing of mental health nurses. In this study, emotional labour was operationalised through three dimensions: emotional display, emotion suppression, and emotion faking. Consistent with previous studies, the results show that emotional labour in all three dimensions was positively related to stress levels during interaction. Also, Pugliesi (1999) found that emotional labour with specific work conditions appeared to have negative impact on psychological outcomes. She proposed that emotional labour increase perceptions of job stress, decrease satisfaction, and increase distress.

As we can see, the necessity of emotional labour as a role requirement in service occupations has been unequivocally supported by many research findings. However, despite the fact that individual health and wellbeing may be negatively affected by emotional labour, there are also other factors that need to be taken into consideration. This prompts the researcher to conduct further investigations by examining other psychological aspects of service work. In the section that follows a selected review of the theoretical and empirical research on the causes and consequences of stress and wellbeing in work settings will be reviewed.

Stress & Affective Wellbeing

During the past 10 years, the world has experienced dramatic changes in society, such as fluctuations in economic conditions and rapid advances in technology. These changes have led to intensive organisational restructuring and changes in culture, in order to survive in a highly competitive environment. Therefore, people in organisations have been compelled to quickly adapt to new job complexities, which sometimes causes frustration and increased stress levels (Foster & Still, 2002). The effects of stress not only impact on the individuals concerned, but also on organisations. The cost of stress can be measured in monetary, medical, and social terms. For example, unwell or unenthusiastic employees cause low productivity and high rates of turnover (Kreitner & Kinicki, 2001). Occupational stress encompasses a cluster of unpleasant emotions, such as tension, frustration, anxiety, anger, and depression (Hart & Wearing, 1995). Burke (2002) identified the sources of work stress for individuals. These are grouped into four categories: the nature of jobs (such as poor physical work conditions and time pressures), work roles (such as role ambiguity, role conflict, and high demand on employee's responsibilities); career development (such as lack of promotional opportunities, and job insecurity); social support (such as poor relations with supervisors, co-workers, or subordinates); and organisational structures and climate (such as limited participation in decision-making, and politics in the organisation). Burke (2002) further proposes that individuals perceive these sources differently depending on their own interpretation of particular situations. If an individual considers a situation threatening, he/she will experience stress reactions in both psychological and physiological terms. These reactions may lead to a state of imbalance. Consequently, individuals may adopt a coping response in order to regain their balance. Unfortunately, not all coping responses are effective. Some individuals utilize palliative methods (such as alcohol or drug abuse, overeating, or smoking) to avoid the actual problem. This can lead to negative psychological and physiological outcomes, such as long-term stress and illness.

Much research studying the effects of stressor on wellbeing has shown that a high level of exposure to the stressors can be harmful to an individual's wellbeing. For example, the research by Burke (1994), which studied the impact of stressor on police officers' wellbeing, showed that emotional exhaustion, and stressful events, such as poor work conditions or physical threat, affected police officer well- being producing psychosomatic symptoms and negative feeling states. Moreover, the study by Gershon, Lin and Li (2002), which focused on the impact of psychosocial work stress on the health and wellbeing of aging police officers, suggested that older workers in high-stress jobs such as the police may be at increased risk of stress-related health and wellbeing problems. In addition, there is some research studying the impact of job characteristics on wellbeing. For example, the research by Kushnir and Melamed (1991), which examined the effects of workload and perceived control on the psychological wellbeing of Type A and Type B industrial workers by using Karasek's job demand-control model, indicated that the combination of a high level of workload and a low level of perceived control can be stressful for the wellbeing of Type A individuals. Similarly the research by Croon, Blonk, Zwart, Frings-Dresen and Broersen (2002) suggested that workload and physical threat have an adverse impact on health and wellbeing; however, it seems that social support acts as a buffer to minimise this impact (Croon, Blonk, Zwart, Frings-Dresen, & Broersen, 2002).

The concept of work-related stress has become of great interest to several theorists and practitioners. Warr (1975), for example, has attempted to explain the causes of stress in the workplace. He proposed that an individual's health and mental problems could be the results of two main factors: personal characteristics such as lack of ability, anxious or rigid personality, and job characteristics, such as work overload, time pressure, and threats. Warr (1987) later modified his original proposal by identifying a wider cluster of job features affecting wellbeing: job control, skill utilization, task demand, job variety, environment clarity, financial security, physical threat, social interaction, and social position. His research in 1990, which studied the associations of mental health with variations in perceived job characteristics, showed that workload and personal control were related to an individual's affective wellbeing. Warr suggested that a high level of personal control leads to a high level of contentment and enthusiasm. Conversely, a high level of workload leads to a high level of anxiety. Kreitner and Kinicki (2001) later presented their conceptual framework for explaining the process of occupational stress. They argued that individuals will have different perceptions regarding the sources of occupational stress - such as job demands, work overload, relations with supervisor, perceived environmental control, managerial behaviour and group conflict - depending on individual differences such as age, gender, and personality traits. High levels of stress in the long term can lead to negative outcomes for the individual. The various outcomes resulting from stress include job dissatisfaction, burnout, absenteeism, turnover, lack of concentration, poor decision-making, forgetfulness, and physical ill-health. Research by Violanti and Aron (1995) on police stressors, also indicated that individual factors such as age and tenure, as well as job characteristic factors, such as physical threat, shift work, level of participation in job decisions, and lack of social support affected police officers' stress levels and their level of job satisfaction.

Many researchers basically regarded affective wellbeing as emotional fulfillment, or "happiness". However, the meaning of happiness seems too equivocal to operationalise, and research investigating this construct would require a clear definition before proceeding. In order to provide a comprehensive explanation of the concept of wellbeing, the researcher in the present study has included some other variables considered to be important indices of individual wellbeing and emotional health. The additional indicators of wellbeing included in this study are job satisfaction, hostility, and positive and negative mood.

Additional Indicators of Emotional Wellbeing

Hostility. This is defined as a personality trait characterised by chronic anger and hate. The construct of hostility comprises cognitive, affective and behavioural components (Matthews, 1997). The cognitive component is characterised as negative beliefs and attitudes towards others. The affective component is felt as an unpleasant emotion ranging from irritation to rage. The behavioural component indicates actions intending to harm others, either verbally or physically. To understand the meaning of hostility, the definition and mechanism of anger (the origin of hostility) should be firstly explained. Johnson (1990) defined anger as an emotional state consisting of feelings of irritation, annoyance, fury, or rage. The level of anger depends on the frequency, intensity and duration of an individual's exposure to stimuli. If individuals experience anger in high intensity, high frequency, and long duration, they will develop hostile attitudes and aggressive behavioural responses. The mechanism of anger can be explained as follows. First, an individual is provoked by a threatening social situation. Second, the person perceives unfair and unjustifiable acts by others. Subsequently, feelings of anger and irritability will occur. Even though an experience of anger is considered normal for human beings, the emotional problems could occur if the anger has not been expressed properly. For example, people expressing anger with aggressiveness may lead to violence. On the other hand, people over-suppressing anger might be prone to emotional problems such as depression and anxiety.

Hostility is the consequence of long term frustration occurring when an individual has been thwarted and unable to change the situation. An example of a relevant situation is the working environment, especially in service jobs which require high emotional suppression when dealing with customers. These types of jobs encourage the suppression of real feelings, which in the long term may cause hostile and aggressive behaviours. For instance, the service providers who always have to suppress their anger towards the offending customers may instead redirect their anger towards someone or something else (e.g., co-workers, subordinates, family members or oneself). This phenomenon is called 'displaced anger' (Johnson, 1990). The adverse impact of hostility on individuals is both mental and physical, and involves the expression of negative health behaviours and practices such as smoking, excessive alcohol intake, or lack of exercise. These problems cause a decrease in wellbeing leading to a decrease in work performance and job satisfaction.

The causes of anger in the workplace have been studied by several researchers. Frequently mentioned factors are poor working conditions, time pressures, workload, and unfair criticism (Johnson, 1990). In addition, some researchers showed that people react to emotional stressors differently depending on their personality. Hostile people have been found to be more physiologically reactive to emotional stressors than non-hostile people, and will be more severely affected. Hostile people also appear to experience more frequent episodes of anger, and they are more prone to interpersonal conflict in their daily life (Fredrickson et al., 2000). As noted above, hostility reflects the individual's state of mind, which represents low levels of emotional wellbeing, or psychological distress.

Mood. Mood is regarded as the individual's current state of mind resulting from a characteristic disposition or temperament. Even though the concepts of mood seem familiar to most researchers, confusion concerning its definition is common. The definition of mood and emotion are often confounded. Gray and Watson (2001) attempted to identify the differences and similarities between mood and emotion. They proposed that despite a similarity between the concepts of mood and emotion, moods are more inclusive and encompassing than emotions. Emotions are response systems provoked by certain or specific stimuli in order to prompt an individual into an action. For example, fear is a response to threat or danger, while anger is a reaction to frustration or insult. The core set of emotions recognised by most theorists includes joy, interest, surprise, fear, anger, sadness, and disgust (Gray &

Watson, 2001). Izard (1992) explained that the basic emotions are regarded as specific feeling states originated instinctively and influencing individual's unique and universally recognised facial expressions. Each emotion typically is distinctive from each other.

Unlike emotions, moods are the combination of short term feeling states reflecting milder or attenuated versions of emotions. They usually cannot be linked to specific incidents or experiences, but rather reflect the successively increasing effect of multiple stimuli (from both internal processes and environmental sources) on an individual's feeling state. For example, annoyance and irritation (moods) are the mild forms of anger (emotion), or nervousness and tension (moods) are the mild forms of fear (emotion). Moods are usually formed into complex combinations, as in a person starting a new job who may experience mixed feelings of joy, excitement, and nervousness.

Compared to emotions, moods are last longer, more frequently, and are less intensity. Table 2.1 shows the differences between emotions and mood.

Table 2.1

Emotion and Mood: Conceptual Distinctions

	Emotion	Mood
Duration	Brief, short term, spontaneous onset, lasting seconds unless stimulus persists	Long term, pervasive, changing state of mind, lasting minutes to days
Object	Focused on a particular object or event; response system	Unfocused
Intensity	High intensity/ activation	Low to moderate intensity/ activation
Frequency	Infrequent occurrence	Frequent, continuous, changing occurrence
Function	Adaptive, to focus attention, provide information to the organism	To instigate, facilitate, sustain, and modify active engagement with the environment
Type entity	Brief state	Longer term state

Source: Gray & Watson (2001)

Moods indicate to us how to interpret and respond to a situation either by approaching or avoiding a stimulus. Several studies have indicated that mood is systematically influenced by a wide range of internal factors, such as self-regulation, and external factors, such as social interaction and stressful life events. Self regulation is regarded as the method used by individuals to cope with their mood (Anshel, 2000). Maladaptive methods would lead to psychological and health problems (Anda, 1997; Catanzaro & Jack, 2006; Lindquist, Beilin, & Knuiman, 1997). Also, biological conditions, such as moderate exercise, optimum food intake, and quality of sleep are regarded as factors enhancing positive moods and reducing negative moods. While the internal factors are usually personal, external factors mostly relate to environments such as working conditions and social interactions.

In the present study, moods are grouped into two main categories: positive and negative mood. According to the operationalisation of positive and negative mood or affect (Watson, Clark& Tellegen, 1988), indicators of positive mood include: attentive, determined, active, strong, and enthusiastic. On the other hand, the indicators of negative mood are: ashamed, afraid, nervous, guilty, and irritable. This research aims to replicate the findings of previous studies, which suggest that moods are basically influenced by working environments and interpersonal relationships.

Job Satisfaction. Locke (1969, p. 316) defined job satisfaction as the "pleasurable emotional state resulting from appraisal of one's job as achieving or facilitating one's job values", while Cranny, Smith and Stone (1992, as cited in Yang & Chang, 2007, p. 2) defined job satisfaction as "an affective (i.e., emotional) reaction to one's job, resulting from an incumbent's comparison of actual outcomes with desired (expected, deserved, etc.) outcomes". The latter definition is consistent with Daniels, Brough, Guppy, Peters-Bean, and Weatherstone (1997) who described job satisfaction as the degree to which individuals like their job, and that job satisfaction represents a positive affective orientation towards the job. Although there is no evidence in the literature that job satisfaction is a bi-polar construct (i.e., a construct that ranges from high satisfaction to high dissatisfaction) as opposed to a negatively-correlated construct, some researchers, as for example Yang and Chang (2007, p. 2) have defined job dissatisfaction as "an unpleasurable emotional state resulting from an appraisal of one's job as frustrating or blocking the attainment of one's values". Therefore, it is clear from the above definitions that job satisfaction is an integral factor of organisational theory and has often been used for evaluating employee wellbeing at work. There has been much research examining the factors that cause job satisfaction, such as temperament, emotional labour, job demands, job control, and social support (Chiu & Kosinski, 1989; A.A. Grandey, 2000; Karasek & Theorell, 1990; La Rocco, House, & French, 1980; Loher, Noe, Moeller, & Fitzgerald, 1985; David Watson, Pennebaker, & Folger, 1986).

Several studies indicate that there are various work-related factors from both the work environment and individual differences that impact on job satisfaction and wellbeing. Consequently, individuals subjected to environmental stressors may experience negative outcomes in their health and work depending on whether they have the necessary organisational and individual level resources. For example, display rules, which are norms and standards of behaviour that prescribe what emotions are appropriate in a given situation, and how these emotions should be publicly expressed (Ekman, 1973), are considered organisational factors related to an individual's wellbeing and job satisfaction. Hochchild (1983) pointed out that high emotional regulation causes alienation and estrangement from one's feelings. She also found that emotional display is negatively correlated with job satisfaction. Also, Kompier (2003) studying the impact of work stressors on police officers suggested that, in order to prevent work stress, organisations should direct their efforts at modifying the work environment. Job redesign efforts should be aimed at reducing occupational risks inherent in the jobs of police officers, and increasing the coping capacity of employees in dealing with the impact of stressful events. However, without attempting to redesign the organisation, if decision-makers only apply employee selection methods based on the capacity to cope with stressors, and provide employee training so that they will be better able to tolerate a poor work environment, the negative impact from work stress will continue to exist (Hurrell, 1995). This claim is also supported by Warr (1996). In his book "Psychology at

Work", Warr suggested that rather than assisting employees after they had work-related problems without directly modifying their environment, a job redesign strategy would be by far a more effective intervention to improve employee job satisfaction and wellbeing. Based on this observation, the present research aims to investigate the predictors of stress and job dissatisfaction of police officers. Discovering how certain job features may predict negative consequences for employees will provide valuable information on how to re-construct the organisation in order to prevent or eliminate risk factors responsible for stress in the work place.

The Antecedents of Wellbeing

There are many organisational factors affecting wellbeing and this should be taken into consideration. As suggested by Grandey (2000), in order to comprehensively understand the effect of emotional labour on wellbeing, not only organisational factors but also individual differences should be taken into account. Therefore, in the present study, the researcher aims to investigate the additional factors that might affect wellbeing. Broadly these influences can be categorised into individual differences and job features. Individual differences such as age, gender, tenure, education, and temperament are treated as the antecedents, whereas, job features (work overload, low job control, and low social support) in combination with emotional labour are considered the main stressors.

In the section that follows, an introduction of previous studies and theories will be outlined and used to generate the hypotheses for this study. First, the job demand-control-support model by Karasek (1979) and Karasek and Theorell (1990) will be introduced to describe the effects of work conditions on the physical and psychological wellbeing of employees. This model describes the impact of poor job features (high job demands, low job control and low social support) on psychological wellbeing. Second, the Vitamin model by Warr (1987), testing non-linear relationships between job characteristics and mental health outcomes, will be discussed.

The Job Demand-Control-Support Model

In 1979, Robert Karasek developed the job demands-control model. This model showed the interactions between high and low levels of psychological demands and decision latitude (job control), which generate four different kinds of psychological work experience: high-strain jobs, active jobs, low-strain jobs and passive jobs. Karasek argued that the increase in strain and physical illness depended on the increase of psychological job demands and the decrease of decision latitude. The model predicts (see Figure 2.4) that in the situation where employees experience high job demands and low job control, they are likely to suffer from high strain leading to psychological and physical health problems (Cell 1). On the other hand, when both job demands and control are high, work becomes challenging and that will encourage employees to learn and develop new skills (Cell 2). However, when job demands are low but control is high low-strain job situation will occur (Cell 3). Finally, employees will experience a passive work situation, when both job demands and control are low (Cell 4). In this situation, the skills and abilities of employees are likely to deteriorate. This hypothesis has been supported by research carried out by Croon, Blonk, Zwart, Frings-Dresen and Broersen (2002), who found that job control buffers the impact of quantitative workload on job satisfaction. Moreover, they suggested that the extent to which job demands impact wellbeing depends on the match between the extent of job control and job demands under consideration.

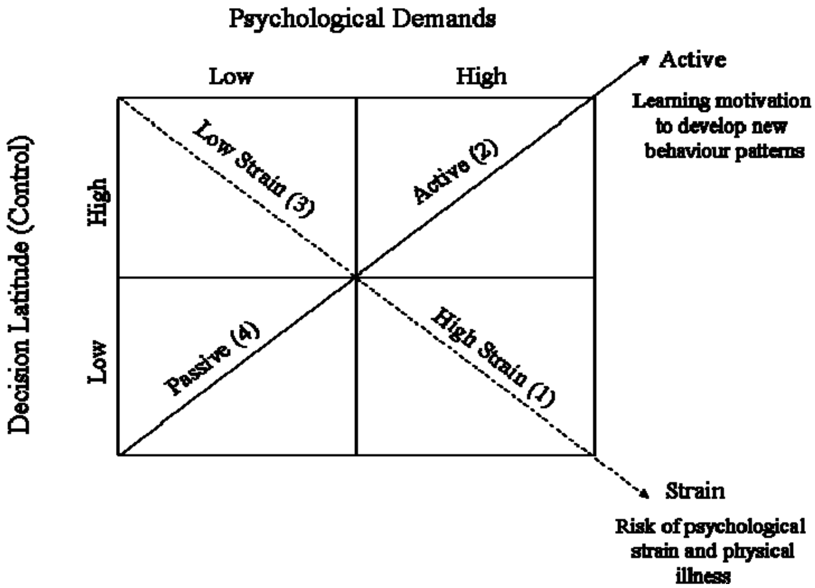

Figure 2.4. The job demand-control model (Karasek, 1979).

However, the demand-control model has been criticised by some scholars who believed that besides job control, there should be more factors moderating the effect of job demands on individual strain (J. V. Johnson & Hall, 1988). As a result of these and similar observations, Karasek and Theorell (1990) modified their original model by adding social support as a third dimension in their framework. The new model is now known as the *job demand-control-support model* (JDC) (see Figure 2.5).

According to this model, and consistent with the original conceptualisation, they argued that interactions between job demands and control would result in four typologies: 1) high-strain jobs (both high job demands and low control), 2) active jobs (high job demands and control), 3) low-strain jobs (low job demands and high control), and 4) passive jobs (both low job demands and control) (Karasek & Theorell, 1990). However, the new expanded model incorporated the role of social support as a moderator affecting the relationships between demands, control, and psychological wellbeing (Kompier, 2003). This model shows that the interactions between job control and social support will lead to four types of work situations: participatory leader (high control and support); cowboy hero (high control but low support); obedient comrade (low control but high support); and, isolated prisoner (low control and low support). This model suggests that the worst kind of working situation is the "isolated prisoner" that characterises assembly line workers, whose pace of work is controlled by the machine. This work condition with low job control, high demands (i.e., machine paced) and lack of social interaction, results in a socio-biological misalignment with human physiological capabilities (Karasek & Theorell, 1990). In other words, employees who work in high demand jobs such as these, and have low personal control will experience high-strain conditions. However, if these employees have the support of supervisors and co-workers, they will tend to be more effective in managing this situation. Several researchers agreed with this concept emphasizing that working situations which are characterised by high demands, low control, and low social support have the most negative effects on employee health and wellbeing (Croon et al., 2002).

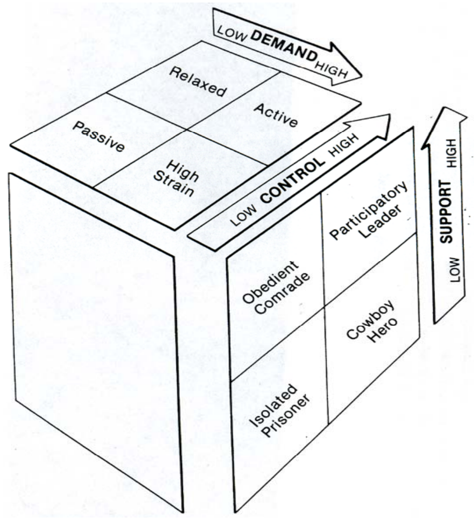

Figure 2.5. Job demand-control-support (JDCS) model.
Source: Karasek & Theorell (1990)

The strength of this model lies in its expanded focus, which takes into consideration not only the physical working conditions (i.e., physical demands on the individual), but also job features, such as control and social support that affect psychological outcomes. However, an additional factor that needs to be taken into consideration in such a model is the role of emotional labour as an important job demand variable. This is due in large part to the changing nature of work, where the requirement of service jobs are characterised by emotional regulation.

The following section describes how the variables in the model impact wellbeing and job satisfaction.

Job Demands. This can be regarded as physical factors affecting stress levels. The fact that poor working conditions cause individual stress and health problems has been investigated in many studies. Several researchers indicated that job characteristics that required high risk or responsibility for others, long working periods, time pressures or workloads produce strong job-related tensions causing physical and mental health problems (Barnett & Brennan, 1995; Dormann & Kaiser, 2002; P. Warr, 1996; Yperen & Hagedoorn, 2003). Dormann and Kaiser (2002), for example, studied the effect of work conditions on job and customer satisfaction and found that job requirements, such as time pressure, are strongly associated with job dissatisfaction and emotional exhaustion.

A good example of a high demanding job is police work. The demands of this occupation have been estimated as excessive (Anderson et al., 2002). In addition to the obvious workload involving shift work (night time and holidays), long work hours, and voluminous paper work, police officers have to deal with several physical threats. Police officers not only have to confront criminals, but also need to be constantly alert and ready to deal appropriately with several types of other threatening situations. Many police officers witness death and suffering resulting from accidents and criminal behaviour. This career may take a toll on police officers' private lives ("Occupational outlook handbook: Police and detective," 2004). These sorts of physical threats can impact negatively on an individual's affective wellbeing and stress. For example, a study of human service workers by Dollard, Winefield, Winefield, and Jonge (2000) indicated that a heavy workload was positively related to psychological distress, and inversely related to job satisfaction. Similarly, research by Rydstedt, Johansson, and Evans (1998), studying the impact of workload on the health of urban bus drivers, showed that an increase in workload impacted negatively on health and wellbeing, manifested in stress-related symptoms. Moreover, Violanti and Aron (1995) examined a range of police stressors, and showed that the situations involving physical threats such as physical attacks, accidents involving patrol cars, and on the job physical injuries are sources of police stressors. Also, Anderson, Litzenberger, and Plecas (2002) indicated that police work requires a high level of physical effort in order to fulfil the job requirements. As a result, police officers who engaged in a high level of physical exertion on the job tended to experience high levels of psychological distress.

Job Control. Karasek and Theorell (1990) operationalised job control or decision latitude as the employee's ability to control his/her own activities and skill usage. Job control refers to the level of one's autonomy to control one's own work. Karasek had studied the moderating effects of job control on the relationship between job demands and wellbeing. The results showed that, in situations of high demands associated with lack of control, blood adrenalin levels go up causing higher blood pressure. He suggested that the combination of high job demands and lack of controllability would cause negative effects on health. Many researchers also supported the idea that job control has a moderating effect on the association between job demands and psychological wellbeing. For example, Kreitner and Kinicki (2001) indicated that increasing the freedom to make decisions, and participating in decision- making buffer the effects of job stressors, such as work overload, on psychological distress.

Several researchers also investigated the influence of job control as the main effect on wellbeing (Dollard et al., 2000; Dormann & Kaiser, 2002). The review by Jones and Fletcher (1996) suggested that there is evidence showing that increasing self-autonomy and control can have significant positive influences on long-term wellbeing. Also, Kompier (2003) suggested that job demand (work overload or poor working conditions) was negatively related to wellbeing. On the other hand, participative decision making positively influenced job satisfaction and wellbeing. Similarly, Dollard, Winefield, Winefield, and Jonge (2000), studying the effect of job demands, job control, and social support, on the productivity and job strain of human service workers, showed that job control was positively related to job satisfaction. Also, Dormann and Kaiser (2002), who studied the effect of job conditions on job and customer satisfaction, reported that task control and time control was inversely related to job dissatisfaction and emotional exhaustion.

Since police work is the main focus of this study, the researcher would like to briefly describe the nature of the occupation in terms of the organisation's characteristics relating to the structure of authority. Basically, the organisational structure of the police force is characterised as bureaucratic. The police organisation could be generally defined in terms of the following three major dimensions (Hickson & Hinings, as cited in Warr, 1975, p. 83):

- rigid structuring of activities (work-related activities of police officers are divided into specific tasks and routines);
- concentration of authority (most decisions are made by the top of the organisation; formal working procedures);
- formalization (working procedures are control by impersonal manners and formally written records).

As a result, police work requires high discipline, and scarcely allows officers to make their own decisions or exercise judgment in the job. Therefore, the present research serves as a good example of a study investigating how lack of job control impacts on individuals' job satisfaction and wellbeing.

Social Support. Social support refers to the overall helpful social interaction related to the job, which comes from both co-workers and supervisors (Karasek & Theorell, 1990). Winnubst and Schabracq (1996) distinguished between informative and instrumental support. Informative support is the willingness of other people to provide intangible support such as opinions and information, while instrumental support is the willingness of other people to provide material or physical support. Later formulations of the construct by Kreitner and Kinicki (2001) suggested that there are four types of social support: esteem support, informational support, social companionship, and instrumental support. First, esteem support refers to information provided by others that a person is accepted and respected irrespective of any problems or inadequacies. Second, information support refers to providing help in defining, understanding, and coping with problems. Third, social companionship refers to spending time with others in leisure and recreational activities. Finally, instrumental support refers to providing financial aid, material resources, or needed services.

In the present study, the researcher identified social support in the workplace as emanating form supervisory and co-worker support by integrating the concept of social support based on previous research (J. S. House, 1981; Karasek, Triantis, & Chaudhry, 1982; Winnubst & Schabracq, 1996). According to previous researchers, supervisor support refers to the support that an individual receives from the person who is in a higher position, and who oversees the work of subordinates in order to maintain the daily work routine. This support includes providing subordinates with advice, material, and information related to work, as well as motivating subordinates to work effectively, and commit to the organisation and its objectives. The key idea of motivation includes: 1) appreciating and respecting subordinates as important contributors to the organisation's success, 2) understanding subordinate's attitudes, 3) having concern for subordinates' problems and dealing with them, 4) creating promotional opportunities for subordinates, 5) encouraging subordinates to improve their skills, or undertake more complex assignments, and 6) being a mentor to subordinates by providing feedback about work performance. Co-worker support is another essential factor relating to wellbeing in workplace. Primarily, individuals derive their support from people occupying positions of equal status in the organisation. Co-worker support may be found in several forms, for example, sharing information or material that is useful to work, or assisting each other when they encounter problems by discussing solutions. Besides this type of support, emotional support is also important in a working situation. Examples of emotional support from co-workers include the following 1) appreciating and showing respect for one another, 2) understanding the attitudes of others, 3) showing concern for co-workers' problems and offering assistance, and 4) accepting ideas from co-workers that are in disagreement with personal views.

Winnubst and Schabracq (1996) described the influence and benefits of social support in the workplace as follows:

- It can reduce the negative impact of psychological stressors on employee health;
- Because social support relates to social contact and social structure it affects the basic psychological processes important in maintaining long-term health in humans;
- Social support can influence one's coping mechanisms and give a positive sense of identity leading to an individual's wellbeing.

Research by Kreitner and Kinicki (2001) claimed that support from supervisors and co-workers are the buffer between job stressors (such as work overload and high organisational expectations) and psychological distress. They explained that social support reduces the effects of stress, such as depression, anxiety, loneliness, and high blood pressure, on an individual's health. In their study, Kreitner and Kinicki showed that people with low social support were more prone to have cardiovascular and immune system problems. Also, Karasek, Triantis and

Chaudhry (1982) examined the impact of social support as a buffer between job stressors and psychological strain, and they argued that the higher the level of social support, the lower the level of psychological strain. Consistent with these results, Dollard, Winefield, Winefield, and Jonge (2000) showed that social support was positively related to job satisfaction and negatively related to psychological distress, while Dormann and Kaiser (2002), who studied the effect of job conditions on job and customer satisfaction, concluded that social support in the workplace, such as supervisor support and peer support, was negatively related to job dissatisfaction and emotional exhaustion.

In conclusion, there is substantial evidence that social support often helps the individual to overcome stress reactions, and, in certain circumstance, it might increase an individual's feeling of control and safety.

Since the development of the Karasek and Theorell job demand-control-support model, explaining the relationship between job characteristics and strain, some researches have voiced their concerns regarding the generalisability of this framework in explaining the relationship between stressors and wellbeing. Although there is empirical support for the JDCS framework focusing on linear effects, many researchers have argued that stress outcomes caused by high strain jobs could also be the result of non-linear effects. Peter Warr (1987), in particular, argued that according to the empirical literature, the relationship between job characteristics and wellbeing maybe non-linear (i.e., curvilinear). Warr's perspective of non-linearity in the relationship between job characteristics and mental health was introduced in his Vitamin model, and this model is discussed in more detail in the following section.

Warr's Vitamin Model

In 1987, Peter Warr introduced the Vitamin model to explain non-linear effects between job characteristics and psychological outcomes. His model challenged the common sense view which suggested that only linear associations characterised these relationships, and these types of relationships featured prominently in such formulations as the Job Characteristics Model (Hackman & Oldhman, 1980).

The main thesis of the Vitamin model is that environmental features such as job characteristics influence mental health in a way that is similar to the effects of vitamins on the human body. Generally, vitamins are essential for the maintenance of a healthy body, and vitamin deficiencies produce bodily impairments, which may lead to physical illness if the problem is not addressed. On the other hand, overdosing of vitamin intake may not improve health beyond a certain point, and may in some instances produce high levels of toxicity. In short, an optimum level of vitamin intake improves health and physical functioning, although an excess of vitamin intake could be toxic. In a similar manner to vitamins, as Warr (1987) noted, job features could result in two different effect types: a "constant effect (CE)" and an "additional decrement (AD)" (see Figure 2.6).

A constant effect is analogous to the effects of vitamins C and E on the human body, which were shown to neither improve nor impair physical health if taken in large doses. An additional decrement is analogous to the effects of vitamins A and D on physical health. An overdose of these vitamins leads to toxic concentration in the body which causes poor bodily functioning and illness. For these reasons Warr coined the label CE to denote the constant relationship that exists between certain job features and wellbeing, and AD to denote the inverted U relationship that exists between a different set of job features and wellbeing (De Jonge & Schaufeli, 1998). In a similar manner to that of vitamins, Warr believed that the effect of job characteristics upon wellbeing and mental health was similar to the way in which vitamins acted upon the human body. He explained that with certain job features an increase in job characteristics initially has a positive effect on an employee's mental health, whereas the absence impairs mental health (segment A). Beyond an optimal level, however, an increase in job characteristics has no additional benefit; that is, a plateau is reached and the level of mental health remains constant (segment B). Further increases in job characteristics may either produce a constant effect or negatively affect mental health (segment C), depending on the nature of these job features.

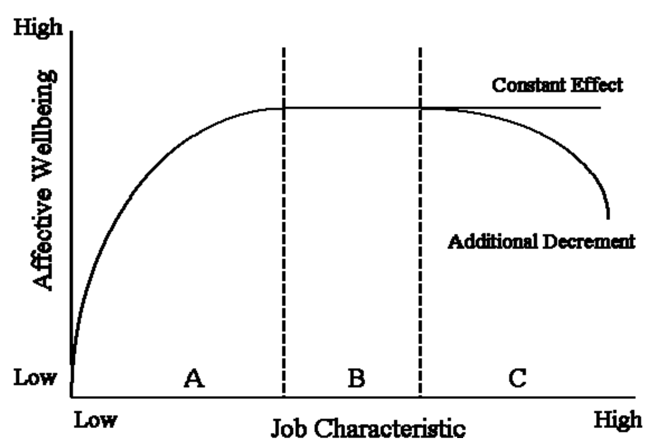

Figure 2.6. The relationship between job characteristics and affective wellbeing within the Vitamin model (Source: Warr, 1987).

Warr (1987) identified 10 main groups of job characteristics affecting employee wellbeing: 1) opportunity for personal control (job control), 2) opportunity for skill use, 3) externally generated goals (job demand), 4) variety, 5) environmental clarity (feedback, job security), 6) opportunity for interpersonal contact (social support), 7) availability of money, 8) physical security (good working conditions) 9) valued social position (e.g., occupational prestige), and 10) supportive supervision (e.g. supervisory support). Warr claimed that the first six job characteristics affect mental wellbeing in an inverted U-shape, similar to the way vitamin A and D affect health. For example, a very high level of job autonomy is potentially harmful because it relates to uncertainty, difficulty in decision making, and high job responsibility (Kompier, 2003). On the other hand, the last four job characteristics are believed to follow the CE pattern. These causal patterns have been supported by previous research, although some have argued that there has not been enough empirical evidence to confirm or disconfirm them (De Jonge & Schaufeli, 1998; Kompier, 2003).

In 1998, De Jonge and Schaufeli investigated the validity of this model by studying 1,437 Dutch health care workers. They noted that the shape of a relationship depended upon the type of variables being studied. For example, an inverted U-shape pattern is expected in the case of job autonomy and job satisfaction, whereas a U-shape curve is expected in the case of job autonomy and emotional exhaustion. The results of their study, however, were not entirely consistent with the predictions of the Vitamin model. The inverted U-shape pattern was found in the relationship between job autonomy and emotional exhaustion, and between social support and job satisfaction. On the other hand, the U-shape pattern was found in the relationship between job demands and anxiety, and between social support and emotional exhaustion.

These inconsistencies in Warr's predictions require further investigation. It is the aim of the present study to further examine the curvilinear relationships between certain job features and individual wellbeing. Among the 10 features in the Vitamin model, three are common with the JDCS influential model: “externally generated goals” (job demands), “opportunity for personal control” (job control), and “opportunity for interpersonal contact” (social support), and these were selected for further analysis in the present study.

Job Features, Emotional Labour and Wellbeing in Police Jobs

During the last two decades, an extensive body of qualitative and quantitative research on emotional labour has focused on a wide range of occupational service categories including: call centre employees (Deery, Iverson, & Walsh, 2002; Lewig & Dollard, 2003), customer service representatives (Leidner, 1999; Totterdell & Holman, 2003), fast-food workers (Seymour, 2000), hospitality personnel (Constanti & Gibbs, 2005; Guerrier & Adib, 2003), supermarket/convenience store clerks (Rafaeli & Sutton, 1987; Tolich, 1993), and wait-staff (Adelmann, 1995). However, there was a paucity of studies conducted on employees working in governmental organisations (Glomb & Tews, 2004; Morris & Feldman, 1997)

The present study on emotional labour will investigate how the adapted model operates within a government organisation rather than in a traditional service organisation such as retailing. Generally, features common to service jobs involve high levels of emotional regulation characterised by: jobs that require face to face or voice to voice contact with the public; workers requiring to display certain emotions to their clients; and employers having control rights over the emotional activities of employees through training and supervision (De Castro et al., 2004; Hochschild, 1983). Police jobs chosen for this study have all the criteria mentioned above. This view is supported by Zapf (2002) who claimed that police work was an occupation requiring emotional labour in employee-client interaction. Police work is regarded as an occupation that requires high levels of mental exertion, and high levels of interpersonal contact. Thus, police officers have to deal not only with physical job demands, but also with psychological job demands. To accomplish the task requirements satisfactorily, both physically and emotionally, police work requires high arousal and mental alertness (Karasek & Theorell, 1990).

Much research focusing on police officers' occupational requirements has shown that police work is stressful (Anderson et al., 2002; Haarr & Morash, 1999; Hurrell Jr, 1995; Jackson & Maslach, 1982). For example, Anderson, Litzenberger and Plecas (2002) suggest that police work is one of the most stressful occupations in the world. The U.S. Department of labour (cited in "Occupational outlook handbook: Police and detective," 2004) described the work conditions of police officers as very dangerous and stressful, because of physical threats and work overload. They explained that police officers need to be constantly alert and ready to deal appropriately with a number of threatening situations. Moreover, because of shift work, they may be required to work overnight, weekends, and holidays; also they, have to work unscheduled long hours during investigation. Violanti, Vena, and Marshall (1986) noted that, compared with other careers, police officers tend to have high rates of suicide, as well as high incidences of digestive and colon cancers, which may be caused by stress. In addition, they found that the longer the tenure in this occupation, the higher the risk of heart disease.

There have been a number of studies that focused on individual characteristics associated with the levels of police officers' stress. Research by Burke (1994) on stressful events, such as work-family conflict, coping, psychological burnout, and wellbeing, showed that there were certain characteristics namely education, tenure, and coping mechanisms, which had an effect on the emotional wellbeing and physical health of police workers. Also research by Haarr and Morash (1999) indicated that individual factors such as gender, race, and coping strategies impacted on occupational stress in policing. In addition, research by Santed, Sandin, Chorot, Olmedo and Garcia-Campayo (2003) examining the role of negative and positive affectivity on the relationship between perceived stress and subjective health showed that negative affectivity had a direct and significant effect on perceived stress and physical health, while positive affectivity had a moderating effect (especially, buffering effects) on both variables.

Moreover, several studies have demonstrated that not only individual factors affect the psychological wellbeing of police officers, but also job characteristics and badly designed work environments, as for example, minimal control over the work to be performed, limited support from supervisors or organisations, underpaid overtime, as well as poor working conditions and physically risky kinds of tasks, such as dealing with criminals, gangsters, terrorists, and strikers (Simons, 1996). Hurrell Jr. (1995) argued that lack of individual control in police jobs, such as inflexible shift work, rigid structures and bureaucracy, as well as departmental politics, are some of the stressors faced by police officers. In a review article written by Sulsky and Smith (2005), job-related stressors frequently experienced by police include excessive paperwork, dealing with the court systems, co-worker and supervisor conflict, shift work and lack of support from the public. Due to the unpredictable nature of police work, police officers often report that the uncertainty of the working environment increases their stress level. Furthermore, Anderson, Litzenberger and Plecas (2002) who investigated physical evidences of police officers' stress argued that job features such as high job demands, low job control, and low organisational support are sources of chronic stress. These researchers identified job stressors in terms of job demands, job control, and organisational support. They argued that components of job demands relating to stress can be grouped into four categories: work overload, excessive paperwork, fear of danger or concern for personal safety, and anticipation of critical incident responses. Secondly, the factors associated with job control can be placed into two categories: frustrations with the criminal justice system and court leniency, and intra-departmental politics. Finally, the factors associated with organisational support can be placed into two categories: lack of sufficient training or resources, and ambiguous promotional processes.

The present research will focus on an examination of the factors associated with work stress, and how they affect the wellbeing and job satisfaction of metropolitan police officers in Thailand. According to many studies conducted in Thailand, police officers have been experiencing high levels of stress, psychological distress, and low levels of job satisfaction. Since there are no employee assistance programs or counselling services made available by organisations, police officers in Thailand have nowhere to turn to for professional assistance. The problem is compounded when seeking help from supervisors or co-workers which is also non-existent. The reasons for this lack of support may not be readily obvious. Dunham (1988), for example, in a review of occupational stress research explained that most police officers have distorted perceptions about stress, and they see any manifestation of it as a confirmation of personal weakness and professional incompetence in the person suffering from it. Police officers fear that if their supervisor, co-workers or subordinates are made aware of their problem, they would interpret this as a sign of professional and personal failure. Therefore, they prefer to hide their problems to seeking help from others, and this may lead to long-term emotional exhaustion.

High levels of stress can affect police officers' job performance in such important work areas as keeping peace in societies, taking care of people, and controlling criminal activities, with negative consequences on the communities that they serve (Anshel, 2000). The consequences of work stress, poor wellbeing and low level of job satisfaction are increased rates of absenteeism and turnover (Loher et al., 1985), as well as decreased levels of organisational commitment and effectiveness at work (Halford, 1987; Kreitner & Kinicki, 2001). These impact negatively on the management of human resources, with undesirable consequences for the effectiveness of the Police Authority. For example, the Police Authority might lose competent and skilled personnel, which means that they will have to spend a huge amount of financial resources in selection and orientation processes for new recruits. Therefore, the results of this study could be made available to interested parties for the development and implementation of interventions in order to address the effects of stressors in the workplace.

Conceptual Framework of the Present Study

Based on aspects of the original model by Grandey (2000), the present model also integrates stress and wellbeing theories from other research findings (Karasek, 1979; P. Warr, 1996). The antecedents of emotional labour, which are shown as situational cues by Grandey, have been eliminated from the present model, and replaced with other factors relating to primary health concerns. Some individual and organisational factors described in Grandey's model as factors affecting emotional labour have also been replaced by the variables directly affecting wellbeing according to Karasek's (1979) and Warr's (1996) models. Also, while organisational wellbeing as the consequence of emotional labour was excluded from the present model factors bearing on individual wellbeing were added to the model.

As shown in Figure 2.7, even though the present model was based largely on Grandey's model, the variables under investigation in the present study have been placed differently. Also, besides testing the effects of emotional labour on wellbeing, other characteristics that primarily affect individual wellbeing have also been taken into consideration. In addition, all possible effects (i.e., linear, curvilinear, and moderator) that could be present in the study will be investigated, such as the moderating effects of emotional labour on the relationship between stressors and psychological outcomes in addition to its direct effects (see Figure 2.7).

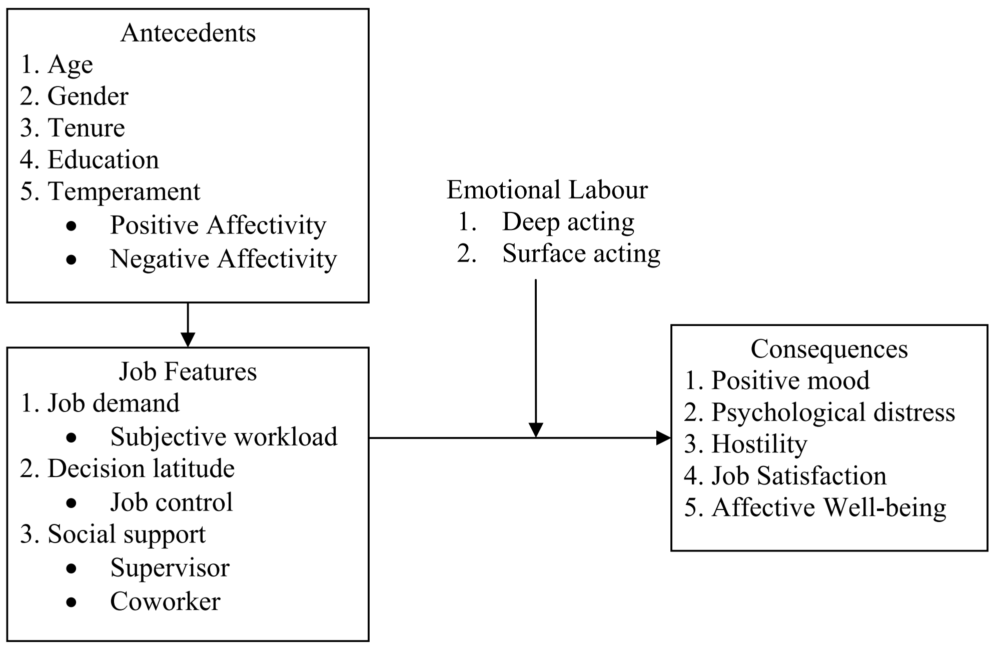

Figure 2.7. Research-adapted conceptual model of emotional labour.

The category of "Antecedents" is represented by age, gender, tenure, education and temperament (i.e., positive affectivity and negative affectivity). Grandey's "Organisational factors" has been developed and re-titled as 'Job features' which includes job demands, job control and social support. The linear and non-linear relationship between job features and the "Consequences" (i.e., job satisfaction, affective wellbeing, psychological distress, hostility and positive mood) will be tested. Finally, the two components of emotional labour (i.e., surface and deep acting) will be tested for the moderating effect on the relationship between job features and psychological outcomes.

Meta-Analysis on Emotional Labour

The purpose of this part of the study is to determine the strength of the relationships between emotional labour (surface acting and deep acting) and the variables associated with employee psychological wellbeing (job satisfaction and emotional exhaustion). Loher, Noe, Moeller, and Fitzgerald (1985) suggested that meta-analysis can be used to estimate the 'true' relationships between variables through identifying the extent to which variance in observed correlation coefficients across studies is due to statistical artefacts, such as sampling error and unreliability in measurement.

In the first part of the meta-analysis, and in order to estimate the relationship between emotional labour (i.e., deep acting and surface acting) and job satisfaction, all previous studies that investigated both directions of the relationship were considered and included. In the second part of the meta-analysis, the obtained correlations between emotional labour (i.e., deep acting and surface acting) and emotional exhaustion were documented. From a pool of 98 journal articles, the researcher examined each published study to determine whether it contained a measure of emotional labour, a measure of job satisfaction and/or emotional exhaustion, and the information necessary to compute a correlation between the two. Several exclusion rules were applied. Firstly, many studies which failed to report the information necessary to obtain a correlation were excluded from further analysis. Secondly, the researcher decided to include only those studies that defined emotional labour according to Grandey's (2000) concept of emotional labour. Specifically, the studies where the emotional labour construct could not be clearly identified, as either surface acting or deep acting, were excluded from the analysis.

Consistent with Grandey's conceptualisation, emotional labour is the process of regulating both feelings and expressions in order to achieve organisationally desired emotions. Two components make up this process: surface acting and deep acting. Deep acting is the extent to which emotional effort is applied to change the perception toward an external situation so that the expected expression becomes genuine. By contrast, surface acting is the effort required to manipulate an emotional response in order to maintain the required expression towards others. Generally speaking, surface acting occurs when individuals suppress their real emotions or fake unfelt expressions. The meaning of surface acting in this case could be interpreted as emotional dissonance, which was described by Ashforth and Humphrey (1993) as the conflict resulting form the tension between displayed and felt emotions. Because of the similarity of the meaning of these terms, the researcher decided to combine all the studies investigating the correlation between psychological wellbeing and either surface acting or emotional dissonance into one category. Thirdly, the researcher excluded studies that did not include direct measure of job satisfaction or emotional exhaustion. For example, studies that used levels of psychosomatic symptoms or customer satisfaction as indicators of psychological wellbeing were excluded. Only 34 journal articles met the criteria for inclusion and these studies are reported in Tables 2.2, 2.3, 2.4, and 2.5.

After excluding studies that did not meet the criteria, the researcher found that the number of studies that investigated the correlation between deep acting and psychological wellbeing was too small to perform the meta-analysis. Only five studies investigated the relationship between deep acting and psychological exhaustion (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2002; Grandey, 2003; Montgomery et al., 2006; Totterdell & Holman, 2003), and three studies tested the correlation between deep acting and job satisfaction (Chu, 2002; De Castro, 2003; Grandey, 2003) (see Table 2.4). Although the meta-analyses could not be performed due to the small number of available studies, the researcher found that the results from these studies showed an inconsistency in the direction of the correlation. For example, some studies reported a positive relationship between deep acting and job satisfaction (e.g., Chu, 2002), while others reported a negative relationship (e.g., Grandey, 2003; De Castro et al., 2006). Also, even though the five studies testing the correlation between deep acting and emotional exhaustion indicated the positive correlation (see Table 2.5), only two of the five studies showed a statistical significant result (Grandey, 2003; Totterdell & Holman, 2003). Of course it is more than likely that these inconsistent results are a consequence of sampling error, and more studies with a large sample size are required before we can determine with confidence the nature of the association between emotional labour and psychological strain variables.

Figure 2.8 provides a framework of the variables included in this section of the meta-analysis.

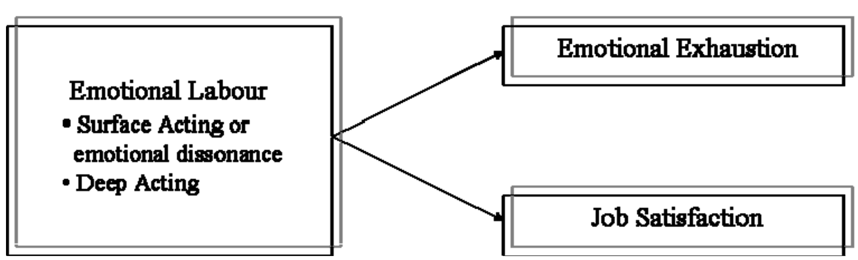

Figure 2.8. A framework of emotional labour and psychological wellbeing.

The meta-analyses in this study used the method developed by Hunter and Schmidt (1990), implemented by a program freely available to researchers (Schwarzer, 1989). The weighted average observed correlation was first calculated. The correlations reported in the studies were then corrected for sampling error and measurement error in both the predictor and the criterion variables using reported alpha coefficients. When reliabilities of predictor or criterion measures were not reported, the missing values were coded zero, as prescribed by the Schwarzer program. The "true" score of the population parameter was then estimated.

Table 2.6 provides the results of the meta-analyses. In addition to reporting estimates of the "true" score correlation, it is also important to describe variability in the correlations. Confidence intervals provide an estimate of the variability around the estimated mean correlation. Credibility intervals provide an estimate of the variability of individual correlations across studies, so that the researcher can determine the "credibility" of the results, or whether moderators are present that may obscure the relationship between the two variables under consideration. Accordingly, 80% credibility intervals and 90% confidence intervals around the estimated population parameter were reported. Although some meta-analyses (e.g., Kossek & Ozeki, 1998) report only confidence intervals while other report only credibility intervals (e.g., Vinchur, Schippmann, Switzer, & Roth, 1998), it is important to report both, because each provides unique information (Judge & Ilies, 2002). A 90% confidence interval excluding zero indicates 95% confidence that the mean correlation is significantly different from zero. Confidence intervals are "generated around the uncorrected, sample-size weighted mean effect size using the standard error of the mean effect size" (Whitener, 1992, p. 316). Whitener argues that if the results indicate that the studies come from one population (i.e., they are homogeneous) the following formula should be used to construct the confidence intervals, where N = the combined sample size from all studies, K = the number of individual studies, and $\bar{r}^2$ the square of the observed weighted mean.

$$SE = \frac{\left(1 - \bar{r}^2\right)}{\sqrt{N - K}}$$

However, if the studies come from different sub-populations (i.e., the studies are heterogeneous) the following formula is appropriate (Whitener, 1990, p. 317), where SD^2_{res} is the residual variance, and all other symbols are the same as above.

$$SE = \sqrt{\frac{(1 - \bar{r}^2)^2}{N - K} + \frac{SD^2_{res}}{K}}$$

Table 2.2

Studies on the Relationship between Surface Acting and Job Satisfaction

Study	Emotional Labour Measure	*α*	Outcome Measure	*α*	*r*	Participant characteristics	N
Cote & Morgan (2000)	Izard (1977; 9)	.91	Spector (1994; 36)	.89	-.29**	American working college students	111
Diefendorff & Richard (2003)	Schabracq & Jones (2000; 4)	.95	Cammann, Fichman, Henkin & Klesh (1979; 3)	.91	-.13	American full-time employees	152
Dormann & Kaiser (2002)	Zapf, Mertini, Seifert, Vogt & Isic (1999; 5)	.68	Wanous, Reichers & Hudy (1997; 1)	N/A	-.38**	German female kindergarten teachers	40
Grandey (2003)	Developed by author (5)	.88	Cammann, Fichman, Henkin & Klesh (1979; 3)	.89	-.45**	American university administrative assistants	131
Grandey, Fisk & Steiner (2005)	Developed by authors (7)	.89	Spector (1997; 3)	.88	-.33**	American employees working in servicing jobs	116
Karl & Peluchette (2006)	Kruml & Geddes (2000; 3)	.79	Brayfield & Rothe (1951; 5)	.86	-.31***	American health care workers	142
Lewig & Dollard (2003))	Zapf, Seifert, Schmutte, Mertini & Holz (2001; 5)	.72	Warr, Cook & Wall (1979; 1)	N/A	-.27**	Australian call centre workers	98

*Note: * p < .05, ** p < .01, *** p < .001, N/A = not applicable, NS = not significant. In columns 2 & 4 the numbers following date of publication represents the number of items for each scale.*

Table 2.2 (continued)

Study	Emotional Labour Measure	α	Outcome Measure	α	r	Participant characteristics	N
Morris & Feldman (1997)	Developed by author (3)	.79	Hackman & Oldham (1975; 5)	.87	-.37**	American employees in debt collection agencies, a military recruiting battalion headquartered and a nursing association	562
Pugliesi (1999)	Developed by author (4)	.62	Developed by author (3)	.79	-.43***	American employees working in mid-sized public university	2069
Zapf, Vodt, Seifert, Mertini & Isic (1999)	Developed by authors (5)	.90	Wanous, Reichers & Hudy (1997)	.57	-.30**	German employees in a handicapped children's home	83
Zapf, Vodt, Seifert, Mertini & Isic (1999)	Developed by authors (5)	.78	Wanous, Reichers & Hudy (1997)	.57	-.12	German employees in the hotel business	175
Zapf, Vodt, Seifert, Mertini & Isic (1999)	Developed by authors (5)	.79	Wanous, Reichers & Hudy (1997)	.57	-.47**	German employees in call-centres	250
Zammuner & Galli (2005)	Grandey (1998; 10)	.76	Diener, Emmons Larsen & Griffin (1985; 5)	.88	-.17**	Italian employees working in service jobs	769

*Note: * p < .05, ** p < .01, ***p < .001, N/A = not applicable, NS = not significant. In columns 2 & 4 the numbers following date of publication represents the number of items for each scale.*

Table 2.3

Studies on the Relationship between Surface Acting and Emotional Exhaustion

Study	Emotional Labour Measure	*α*	Outcome Measure	*α*	*r*	Participant characteristics	N
Bakker & Heuven (2006)	Zapf, Mertini, Seifert, Vogt & Isic (1999; 8)	.64	Demerouti, Bakker, Vardakou & Kantas (2003; 8)	.85	.37**	Nurses in Netherland	108
Bakker & Heuven (2006)	Zapf, Mertini, Seifert, Vogt & Isic (1999; 5)	.76	Maslach, Jackson & Leiter (1996; 5)	.92	.42**	Police officers in Netherland	101
Brotheridge & Grandey (2002)	Brotheridge & Lee (1998; 3)	.74	Maslach & Jackson (1986; 9)	.91	.18**	Canadian full-time employees	238
Brotheridge & Lee (Brotheridge & Lee, 2002)	Brotheridge & Lee (1998; 3)	.89	Maslach & Jackson (1986; 9)	.91	.20**	Canadian employees	236
Dormann & Kaiser (2002)	Zapf, Mertini, Seifert, Vogt & Isic (1999; 5)	.68	Bussing & Perrar (1992; 9)	.86	.14	German female kindergarten teachers	40
Glomb & Tews (2004)	Morris & Feldman (1997; 3)	.73	Wharton (1993; 5)	.85	.40*	American students, hotel employees, healthcare employees and police officers	392

*Note: * p < .05, ** p < .01, ***p < .001, N/A = not applicable, NS = not significant. In columns 2 & 4 the numbers following date of publication represents the number of items for each scale.*

Table 2.3 (Continued)

Study	Emotional Labour Measure	*α*	Outcome Measure	*α*	*r*	Participant characteristics	N
Grandey (2003)	Developed by author (5)	.88	Maslach & Jackson (1986; 9)	.90	.58**	American university administrative assistants	131
Grandey, Fisk & Steiner (2005)	Developed by author (7)	.89	Wharton (1993; 6)	.89	.37**	American employees working in servicing jobs	116
Karl & Peluchette (2006)	Kruml & Geddes (2000; 3)	.79	Barnett, Brennan & Gareis (1999; 12)	.87	.42***	American health care workers	142
Lewig & Dollard (2003)	Zapf, Seifert, Schmutte, Mertini & Holz (2001; 5)	.72	Maslach & Jackson (1986; 8)	.92	.43**	Australian call centre workers	98
Liu, Perrewe, Hochwarter & Kacmar (2004)	Schabracq & Jones (2000; 10)	.73	House & Rizzo (1972; 6)	.87	.35**	American employees	229
Mann (1999)	Developed by author	.88	Developed by author (6)	N/A	.35**	British office-based employees	137
Mann & Cowburn (2005)	Mann (1998; 17)	.88	Brantley & Jones (1989; 58)	N/A	.25**	British nurses	35
Montgomery, Panagopoulou ,de Wildt & Meenks (2006)	Brotheridge & Lee (1998; 3)	.74	Schaufeli, Leiter, Maslach & Jackson (1996; 5)	.87	.28**	Employees from the Dutch Government Organisation	174
Morris & Feldman (1996b)	Developed by author (3)	.79	Wharton (1993; 6)	.87	.33***	American employees with emotional labour requirements	213

*Note: * $p < .05$, ** $p < .01$, *** $p < .001$, N/A = not applicable, NS = not significant. In columns 2 & 4 the numbers following date of publication represents the number of items for each scale.*

Table 2.3 (Continued)

Study	Emotional Labour Measure	α	Outcome Measure	α	r	Participant characteristics	N
Pugliesi (1999)	Developed by author (4)	.62	Langer (1962; 22)	.93	.45***	American employees working in mid-sized public university	2069
Schaubroeck (2000)	Developed by authors	.96	Caplan, Cobb, French, Harrison & Pinneau (1975; 20)	.86	.43***	American employees in a major survey research organisation	217
Totterdell & Holman (2003)	Brotheridge & Lee (1998; 3)	.76	Developed by authors (1)	N/A	.24	Customer service employees in England	18
Zammuner & Galli (2005)	Grandey (1998; 5)	.76	Maslach & Jackson (1986; 9)	.89	.28**	Italian employees working in service jobs	769
Zapf & Holz (2006)	Zapf, Mertini, Seifert, Vogt & Isic (1999)	.80	Bussing & Perrar (1992; 9)	.88	.27**	German Employees in service jobs	1152
Zapf, Vodt, Seifert, Mertini & Isic (1999)	Developed by authors (5)	.90	Bussing & Perrar (1992; 9)	.87	.42**	German employees in a handicapped children's home	83
Zapf, Vodt, Seifert, Mertini & Isic (1999)	Developed by authors (5)	.79	Bussing & Perrar (1992; 9)	.92	.48**	German employees in call-centres	250

*Note: * $p < .05$, ** $p < .01$, *** $p < .001$, N/A = not applicable, NS = not significant. In columns 2 & 4 the numbers following date of publication represents the number of items for each scale.*

Table 2.4

Studies on the Relationship between Deep Acting and Job Satisfaction

Study	Emotional Labour Measure	α	Outcome Measure	α	*r*	Participant characteristics	N
Chu (2002)	Developed by author (8)	.77	Hackman & Oldham (1975; 5)	.80	.22*	U.S.A employees working in hospitality industrial	253
De Castro (2003)	Developed by author (4)	.66	Karasek, Gordon, Pietrokovsky, Freese & Pieper (1985; 5)	.80	-.058	U.S.A young workers	127
Grandey (2003)	Developed by author (2)	.79	Cammann, Fichman, Henkin & Klesh (1979; 3)	.89	-.21**	U.S.A university administrative assistants	131
Yang and Chang (2007)	Lin (2000; 24)	.85	Weiss, Davis, England & Lofguist (1967; 20)	.92	.63**	Taiwanese full-time nurses	295

*Note: * p < .05, ** p < .01, *** p < .001, N/A = not applicable, NS = not significant. In columns 2 & 4 the numbers following date of publication represents the number of items for each scale.*

Table 2.5

Studies on the Relationship between Deep Acting and Emotional Exhaustion

Study	Emotional Labour Measure	α	Outcome Measure	α	r	Participant characteristics	N
Brotheridge & Grandey (2002)	Brotheridge & Lee (1998; 3)	.83	Maslach & Jackson (1986; 9)	.91	.02	Canadian full-time employees	238
Grandey (2003)	Developed by author (2)	.79	Maslach & Jackson (1986; 9)	.90	.33**	U.S.A university administrative assistants	131
Montgomery, Panagopoulou , de Wildt & Meenks (2006)	Brotheridge & Lee (1998; 3)	.90	Schaufeli, Leiter, Maslach & Jackson (1996; 5)	.87	.09	Employees from the Dutch Government Organisation	174
Totterdell & Holman (2003)	Brotheridge & Lee (1998; 3)	.85	Developed by authors (1)	N/A	.50**	Customer service employees in England	18
Zammuner & Galli (2005)	Grandey (1998; 1)	N/A	Maslach & Jackson (1986; 9)	.89	NS	Italian employees working in service jobs	769

*Note: * $p < .05$, ** $p < .01$, *** $p < .001$, N/A = not available, NS = not significant. In columns 2 & 4 the numbers following date of publication represents the number of items for each scale.*

Table 2.6

Results of the Meta-Analysis on the Relationship between Surface acting and Emotional Exhaustion and Job satisfaction

Variables	K	N	$\bar{r}$	ρ	SD_{ρ}	Fail-Safe N	80% CV LL	80% CV UL	90% CI LL	90% CI UL
Job Satisfaction	13	4,698	-.35	-.44	.12	10	-.59	-.29	-.38	-.32
Emotional Exhaustion	22	6,948	.36	.44	.09	18	.32	.56	.33	.39

Note: K = number of studies; N = combined sample size; $\bar{r}$ = weighted mean correlation; ρ = estimated true score correlation; SD_{ρ} = standard deviation of true score correlation; CV = credibility interval; CI = confidence interval

Emotional Labour & Psychological Wellbeing

As shown in tables 2.2 and 2.3 job satisfaction and emotional exhaustion are the indicators of psychological wellbeing associated with emotional labour that have attracted the most research attention. As reported in Table 2.6, the results of the meta-analysis show a statistically significant mean weighted negative correlation ($\bar{r}$ = -.35) between surface acting and job satisfaction, while the relationship between surface acting and emotional exhaustion was positive and statistically significant ($\bar{r}$ = .36). When these results were corrected for attenuation of the predictor and criterion measures, by making adjustments after considering their alpha reliabilities but not their restriction of range, the population parameter rho (ρ) was -.44 for the association between surface acting and job satisfaction, and .44 between surface acting and emotional exhaustion.

For the *Surface Acting – Emotional Exhaustion* association, the results show that the sampling error variance was 26.77%, while variance due to the unreliability of the predictor and criterion constructs was 4.41%, for a total variance due to all artefacts of 31.17% (see appendix2). If the residual variance exceeds 25% as in this case (100 – 31.17 = 68.8%), it may indicate that moderators are present, and that the studies collected for the meta-analysis come from difference sub-populations. This test is referred to in the literature as the Schmidt-Hunter 75% rule (SH-75%).

To test statistically for the variability in the sample correlations across studies (i.e., whether the observed variation is greater than what would be expected by chance alone), a chi-squared test, also know as the Q statistic in meta-analysis, with degrees of freedom K-1 (where K is the number of studies in the meta-analysis), may be used, where T = number of cases, $\bar{x}$ = the weighted mean effect size; and S^2 the observed variance.

$$\chi^2_{K-1} = \frac{T}{(1-\bar{r}^2)^2} S^2_r$$

The conclusion that the studies are heterogeneous is reinforced when taking into consideration the Q statistic (χ^2 (21) = 82.20, p < .001). In general, for the detection of moderators following a meta-analysis the Schmidt and Hunter seventy-five percent rule (SH-75%) and the Q statistic (based on chi-square) are recommended (Koslowsky & Sagie, 1993). In addition, the credibility interval (CV) shown in Table 2.6 is rather large (.56 - .32 = .24), suggesting that, although the interval does not straddle zero, the difference between upper and lower CV interval limits is substantial (Koslowsky & Sagie, 1993), indicative of the presence of moderators.

An examination of the studies found in the literature shows a positive and significant relationship between surface acting and emotional exhaustion (e.g. Bakker & Heuven, 2006; Brotheridge & Grandey, 2002; Brotheridge & Lee, 2002; Glomb & Tews, 2004; A.A. Grandey, 2003; A.A. Grandey et al., 2005; Karl & Peluchette, 2006; Lewig & Dollard, 2003; Liu et al., 2004; Mann, 1999; Mann & Cowburn, 2005; Montgomery et al., 2006; Morris & Feldman, 1996a; Pugliesi, 1999; J. Schaubroeck, 2000; Zammuner & Galli, 2005; Zapf & Holz, 2006; Zapf, Vogt et al., 1999). Only two studies showed a non-significant positive relationship between surface acting and emotional exhaustion (e.g., Dormann & Kaiser, 2002; Totterdell & Holman, 2003), but these results may be due to relatively small sampling sizes (Dormann and Kaiser had an N = 40, while the study by Totterdell and Holman had an N = 18) and the potential for sampling error and measures with restricted ranges.

Table 2.6 shows the results of a *Fail-Safe N* test (Orwin, 1983; Rosenthal, 1979), which considers the possibility that the studies used for the meta-analysis were biased, and the inclusion of other non-published studies would reduce the overall effect size from the present level $\bar{r} = .36$ to $\bar{r} = .20$. The number of "missing" studies required for this to occur was 18; that is, an additional 18 studies with zero effects would be necessary to reduce the meta-analytic results to a small effect size (i.e., $\bar{r} = .20$) rather than the empirical results shown in Table 2.6. This indicates a relatively good result.

The results of meta-analysis support Hochschild's hypothesis (1983) that having to engage in surface acting causes eventual alienation or estrangement from one's genuine feelings, leading to dysfunctional consequences for various aspects of psychological wellbeing.

To demonstrate the practical importance of the association between a predictor and a criterion variable Rosenthal and Rubin (1983) provided an intuitive index that addresses the impact attributable to the predictor. The binomial effect size display (BESD), as it is known, categorises the predictor as "high" and "low", and is expressed as a 2 X 2 contingency table. If, for example, surface acting were to be categorised as "above" and "below" the median level, and emotional exhaustion as either "high" or "low" the median level as shown in Table 2.7, a mean correlation of $\bar{r} = .36$, between surface acting and emotional exhaustion, would correspond to increasing "burnout" (i.e., high emotional exhaustion) by 36 percent (i.e., 68 – 32 = 36).

Table 2.7

Binomial Effect Size Display between Surface Acting and Emotional Exhaustion

Surface Acting	High Emotional Exhaustion	Low Emotional Exhaustion	Σ
Below Median Level	32	68	100
Above Median Level	68	32	100
	100	100	200

Note: $\bar{r}$ = .36 for 13.17% of variance explained.

For the *Surface Acting - Job Satisfaction* association, a number of studies found a statistically significant negative correlation between these two variables (e.g. Cote & Morgan, 2000; Diefendorff & Richard, 2003; Dormann & Kaiser, 2002; A.A. Grandey, 2003; A.A. Grandey et al., 2005; Karl & Peluchette, 2006; Lewig & Dollard, 2003; Morris & Feldman, 1997; Pugliesi, 1999; Zammuner & Galli, 2005; Zapf, Vogt et al., 1999). Employees who follow organisational display rules through surface acting as a means of controlling their emotional expression during service transactions report lower levels of job satisfaction. For example, the Morris and Feldman study (1997), which was carried out with samples of employees working in debt collection agencies, military recruiting battalion headquarters, and nursing, showed that high levels of surface acting not only led to emotional dissonance and emotional exhaustion, but also to lower job satisfaction.

The binomial effect size display (BESD) shown in Table 2.8 indicates that a mean negative correlation of $\bar{r}$ = -.35 between surface acting and job satisfaction would correspond to decreasing the latter by 34 percent (i.e., 67 – 33 = 34).

Table 2.8

Binomial Effect Size Display between Surface Acting and Job Satisfaction

Surface Acting	Low Job Satisfaction	High Job Satisfaction	Σ
Below Median Level	33	67	100
Above Median Level	67	33	100
	100	100	200

Note: $\bar{r}$= -.35 for 12.00% of variance explained.

Table 2.6 shows the results of a *Fail-Safe N* test (Rosenthal, 1979; Orwin, 1983), which indicates that it would require 10 "missing" studies with null results to reduce the overall effect size from the present level ($\bar{r}$ = -.35) to ($\bar{r}$ = -.20). This is also a relatively good result.

Results of the meta-analysis show that the sampling error variance was 16.34%, while variance due to the unreliability of the predictor and criterion constructs was 10.71%. A total variance due to all artefacts was 27.05%. Therefore, the residual variance exceeds 25% (i.e., 100 – 27.05 = 72.95%), and according to the SH-75% rule this result may indicate that the studies collected for the meta-analysis come from difference sub-populations. This conclusion is supported by the Q statistic, which also suggests that the studies are heterogeneous; that is, the chi-square test with 12 degrees of freedom resulted in a statistically significant outcome (χ^2 = 79.563, $p < .001$). In addition, the credibility interval (CV) shown in Table 2.6, which ranges between -.59 and -.29, is large according to "rule of thumb" criteria (Koslowsky & Sagie, 1993) and therefore signal the presence of moderators.

Even though it was not possible to perform a meta-analysis on the relationship between deep acting and wellbeing, due to the small number of reported studies in the literature, there were contradictory findings emerging from the literature review. Many researchers studying the relationship between deep acting and job satisfaction found different results for occupational groupings and industries. For example, in an exploratory research on employees working as service providers, Grandey (2003) found that employees who performed high levels of deep acting experienced lower levels of job satisfaction and higher emotional exhaustion. This is similar to De Castro's (2003) study on American young workers, where higher levels of deep acting were associated with lower job satisfaction. On the other hand, Yang and Chang's study (2007) conducted on Taiwanese nurses showed a different result. These researchers found that the higher the deep acting the higher the job satisfaction. Similar result were reported in Chu's study (2002) conducted on American employees working in the hospitality industry. She found a significant and positive relationship between deep acting and job satisfaction. Smith and Kleinman's study (1989) also reported inconsistent results when measuring the relationship between emotional labour and wellbeing. The empirical findings of an integrated approach adopted in Smith and Kleinman's study revealed that the relationship between emotional labour and job satisfaction remains uncertain.

Hypotheses of the study

A comprehensive review of the literature presented in this chapter revealed two main concerns associated with the study of emotional labour: the conceptualisation of emotional labour and its measurement, and the sample composition reported in some of the studies. First, in terms of the conceptualisation of emotional labour and its measurement, the present researcher is of the view that the assessment of the antecedents and consequences of emotional labour could not be completed without considering measurement issues. The present literature review found that, due to the variety of conceptualisations of emotional labour put forward by several theorists, different measurement models were developed and used in their studies. It seems that the inconsistent results found in previous studies may be the result of the different operationalisations of the concept of emotional labour. This view is supported by Brotheridge and Lee (2003) who argued that despite recent theoretical advances, only few attempts have been made to develop a psychometrically rigorous multidimensional measure of emotional labour. The wide variation in measuring emotional labour in previous studies, and the lack of consistency with which the emotional labour construct has been operationalised, makes it difficult to argue that all measures are associated with a core construct. For example, Wharton (1993) used a one-dimensional measure of emotional labour based on the frequency of customer contact. Kruml and Geddes (2000) conceptualised emotional labour as a combination of emotional effort and emotional dissonance. By contrast, Brotheridge and Lee (2003) did not consider emotional dissonance to be a component of emotional labour, but instead defined the construct in terms of duration of interaction, its frequency and intensity, and variety of emotional display and display rules (surface and deep acting).

Borrowing from Brotheridge and Lee's research, the present researcher defined emotional labour more narrowly to include the most salient emotionally laden variables: surface acting and deep acting.

Another concern arising from the literature review is the type of participant used in previous research. Recently, the popularity of the 'service minded' attitude has increased in many organisations, not only in private enterprise but also in the public sector. Government organisations nowadays realise the importance of providing good customer service, and encourage employees to manage their emotions and expressions towards the service recipients. However, the literature review shows a dearth of studies on emotional labour conducted in government sectors, with only 10% of reported studies having been carried out in this sector (e.g., police officers, military officers). This obvious gap in research prompted the present investigation into the Thai police force organisation, especially since more than 95% of the studies have been conducted on participants working in Western cultures (the majority of studies were in the USA), and only less than 5% of studies in Asian countries such as Hong Kong and China.

Overall, the review shows that no major research has been carried out in an eastern country, especially in South-East Asia. As mentioned earlier, Thailand, like any other developing country, has undergone some major changes in national economic activity, which has shifted the emphasis from the agricultural and manufacturing sectors to the services sector. Consequently, the nature of jobs has changed dramatically in that country. Therefore, it is opportune to expand the study of emotional labour in the workplace within the Thai context, because of its significance in terms of the theoretical understanding and its practical application.

Testing of the first hypothesis involves defining the construct of emotional labour, and applying rigorous validation and cross-validation procedures to determine its dimensionality. More specifically, Hypothesis 1 states:

Hypothesis 1: The measurement models in the present study, developed on theories introduced in Western cultures, have equivalent factorial latent structures across two sub-samples of Thai police officers; that are, invariant loadings, and invariant factor covariances.

As was discussed earlier, the present study also attempts to incorporate emotional labour into the job demands-control-support model (JDCS) (Karasek & Theorell, 1990) and the Vitamin model (P. Warr, 1987), control for demographic variables (e.g. age, gender, tenure, education, and temperament), and test for linear, non-linear, and interactive effects for predicting psychological outcomes.

Consistent with the predictions of the Vitamin model emotional labour will show non-linear effects in the shape of an inverted U (or U shape) relationship with psychological wellbeing outcomes (i.e., job satisfaction, positive mood, affective wellbeing, hostility and psychological distress). The outcome variables of wellbeing/distress have varying levels of emphasis, by tapping into more affective (i.e., positive mood) or more cognitive (i.e., job satisfaction) aspects of the individual, thus providing a more comprehensive account of psychological health (P. B. Warr, 2007).

Hypothesis 2.1: After controlling for demographic and dispositional variables on Step 1of the regression equation, and in competition with three JCDS variables on Step 2, surface acting and deep acting will predict psychological wellbeing/distress;

Hypothesis 2.2: After controlling for all the linear components in *Hypothesis 2.1*, the quadratic components of the JCDS and emotional labour variables will enter the regression equation, and will predict additional variance in psychological wellbeing/distress;

Hypothesis 2.3: After controlling for all the linear components in *Hypothesis 2.1*, and the quadratic components of the JCDS and emotional labour variables in *Hypothesis 2.2*, the following interaction terms will be statistically significant in explaining psychological wellbeing/distress:

Hypothesis 2.3.1 job demands X surface acting;

Hypothesis 2.3.2 job control X surface acting; and,

Hypothesis 2.3.3 supervisory support X surface acting.

Hypothesis 2.3.4 job demands X deep acting;

Hypothesis 2.3.5 job control X deep acting; and,

Hypothesis 2.3.6 supervisory support X deep acting.

Summary and Conclusions

The present chapter provided a review of previous research on the effect of emotional labour on employees' psychological wellbeing. The discussion started with a description of the meaning of emotional labour and its components introduced by previous researchers, followed by relevant models that are potentially linked to emotional labour, such as Karasek and Theorell's Job Demands-Control-Support model, and Warr's Vitamin model.

As researchers have begun investigating emotional labour in the workplace, two main bodies of research have emerged, aimed at identifying the causes and consequences of emotional labour, and testing for the dimensionality and psychometric properties of the emotional labour construct.

The literature review described earlier has shown that several researchers have broadened to expand the area of study in an attempt to understand how emotional labour impacts the wellbeing of individuals and organisations. From this research, several conceptualisations of emotional labour were formulated, and a number of emotional labour dimensions were proposed. In spite of the recent increases in research activity in this area, some limitations related to the development of theory and empirical research emerged.

The gaps found in previous research motivated the present researcher to critically examine the conceptualisation of the emotional labour construct. For example, although the recent model by Grandey (2000) describing the antecedents and consequences of emotional labour was comprehensive, it does not give due attention to organisational factors as the antecedents of emotional labour. Therefore, in order to investigate the impact of emotional labour on the relationship between certain organisational factors and psychological outcomes, the researcher has developed a more expanded conceptual framework by integrating Grandey's model with the Job Demands-Control-Support (JDCS) model developed by Karasek and Theorell (1990).

The JDCS model proposes that employees who experience high levels of job demands, together with low levels of job control and low levels of social support, are more likely to be vulnerable to workplace stressors. The Karasek and Theorell model has been thoroughly tested during the last several years and has received support from a number of studies in the area of stress and wellbeing. However, one limitation of this model is that it has focused exclusively on the linear and interactive relationships between job features and psychological outcomes, and ignored the possibility that some of the same job features may have also have non-linear associations with the outcome variables. Peter Warr (1987), for example, noted that the relationship between job features and psychological outcomes may be quadratic (curvilinear), and provided theoretical and empirical justification for his argument.

In view of this evidence the researcher has incorporated Warr's (1987) Vitamin model (1987) in the present study. The main thesis of the Vitamin model is that job features influence mental health in a way that is akin to the effects of vitamins on the human body. Just as some vitamins taken in large doses would have detrimental effects on the physical wellbeing of the individual, excessive levels of job control (e.g., too much responsibility for resources and outcomes) or social support (e.g., too much indebtedness to the support provider) would adversely impact psychological wellbeing. As a consequence of these refinements the researcher aims to test the relationship between job features and psychological outcomes, and investigate both linear and curvilinear trends in the data. In short, a more comprehensive testing procedure will be applied in the present study to identify the relationship between emotional labour and the JDCS variables and psychological wellbeing/distress, by examining, linear, quadratic and interactive effects.

Second, in term of study methodology, the literature review concluded that most previous studies were conducted in Western countries, for example the USA, Canada, and Western European countries, and only a few studies were conducted in Eastern countries, reflecting a major gap in the investigation of the emotional labour construct. In addition, the researcher found that most of the samples used in these previous studies came from employees working in service or retail industries such as shop assistants, flight attendants, nurses, and call centre employees. Only a few studies sourced government or public sector organisations (Bakker & Heuven, 2006; Glomb & Tews, 2004; Montgomery et al., 2006). Broheridge and Grandey (2002) suggested that if researchers wish to examine whether emotional labour affects organisational members negatively or positively, different occupational categories from private and public sector organisations should be sampled to determine whether they generate different results.

Heading this advice, the focus of the present study is to investigate the impact of emotional labour on the employees of a public sector organisation in an Asian country, namely the Thai police force. A major problem associated with conducting this research in a non-English speaking country was the difficulty associated with the development and operationalisation of the emotional labour construct and associated organisational variables that have not been previously translated or administered in Thai language. The details of the development of the instrument can be found in the Chapter 3.

A Meta-analysis was also conducted in order to provide an overall picture of the relationship between emotional labour and wellbeing. In general, the results of the Meta-analysis showed a significant and negative relationship between surface acting and job satisfaction. Also a significant and positive relationship was found between surface acting and emotional exhaustion, suggesting that emotional labour has dysfunctional consequences for the individual worker.

Overall, the review of the literature pointed to two serious limitations. Firstly, there was inconsistency in the way the emotional labour construct was measured. As shown in Tables 2.2, 2.3, 2.4, and 2.5 several different emotional labour scales were developed by various theorists and used in their studies. These scales used slightly different conceptualisations of the construct, which may have affected the reliabilities of the measures, and resulted in attenuation of the relationships with the outcome variables. Also, some of the studies reported small sample sizes, and this would have more certainly resulted in higher sampling errors. That is, although large random samples will tend to be representative of the population from which they are drawn, small random samples are not, as some researchers have convincingly demonstrated (Salgado, 1995).

Finally, one of the aims of the current study was to validate and cross-validate an emotional labour instrument that has been translated from English into Thai so that it could be used for further research in Thailand. Also, there is a dearth of research investigating the relationship between deep acting and psychological wellbeing/distress, and what little evidence exists is far from conclusive. Future research will need to examine these relationships in more detail for a better understanding of the relationships between surface acting, deep acting and psychological outcomes.

Chapter III

Instrumentation

Overview

The specific purpose of this study was to examine the experience of emotional labour in a group of metropolitan police officers in Thailand, and its impact on the relationship between job features and a number of psychological outcomes. The hypothesis that the surface acting and deep acting components of emotional labour moderate the relationship between job features (job demands, job control, and social support) and psychological outcomes (job satisfaction, psychological distress and affective wellbeing) was tested. This research is the first investigation of the moderating effects of emotional labour on the association between job features and psychological outcomes among a sample of Thai police officers.

The primary phase of this study involved the examination of the psychometric properties of a questionnaire comprising eight scales: the Positive-Negative Affectivity scale (PANAs), the Job Feature scales, the Emotional Labour scale, the Job Satisfaction scale, the Affective Wellbeing scale, the Psychological Distress scale, the Hostility scale, and the Mood scale. Since this study was conducted in Thailand and the participants were Thai police officers, the scales had to be translated from English to Thai. The translation procedure was carefully conducted in order to acquire a precise interpretation of the constructs being investigated. The details of this procedure are explained in the first part of the study. The second phase of the study involved the investigation of the moderating effects of the surface acting and deep acting components of emotion labour on the relationship between job features and psychological outcomes.

An evaluation of the psychometric properties of the questionnaire

As mentioned earlier, the survey was conducted in Thailand in the Thai language and the scales were translated from English into Thai.

Harpaz (1983, cited in Harpaz, 1996, p. 5) explained the necessity of developing culturally-specific items that maintain the ‘meaning’ of the constructs for international comparisons. He claimed that, for an international study, there were three main requirements for demonstrating equivalence during scale development. These requirements are based on functional, conceptual, and metric issues. For functional equivalence, a scale needs to address questions representing behaviour developed in response to a common problem in the cultures being studied. This equivalence must occur naturally without being manipulated by the researcher. For conceptual equivalence, the questions in the survey need to be based on the same understanding between cultures. That is, questions used in the research should be equivalent in meaning between cultures. This equivalence, also called “theoretical conceptualization”, is achieved by making meaningful interpretations instead of identical interpretations. To achieve such conceptual equivalence, it may be necessary to add more questions to the scale than is required in the original language. Finally, metric equivalence is the psychometric equivalence of the scales across different cultures.

There are two criteria for establishing this equivalence. Firstly, the covariance among variables should be replicable across cultures. Secondly, the statistical relationships among dependent variables (as reflected in the correlation matrices and factor structures, for example) should be similar across cultures.

To achieve all three equivalences, the questionnaires were translated according to techniques introduced by Brislin (1983, cited in Harpaz, 1996, pp. 46-47). Metric equivalence was then assessed through an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) using SPSS and EQS.

Three translation techniques (back-translation, committee procedure, and pre-test) were used in this study. Firstly, back-translation and the committee procedure were combined. The original English questionnaires were translated into the Thai language by the researcher and then back-translated into English by committee members working independently. The committee consisted of five bilingual translators. The back-translations from each committee were compared with the original English questionnaires to ensure that the meaning had been retained. The committee, including the researcher, then discussed the findings, and where necessary made corrections to the translation. According to Sekaran (1983, cited in Harpaz, 1996, p. 46), a good back-translation provides literal accuracy securing vocabulary equivalence, idiomatic equivalence, and grammatical equivalence, which are all important for measurement instrumentation.

The second step involved the pre-test technique known also as the “pilot study”. Before administering the survey to the target population (i.e., the police officers in Bangkok), the scales were pre-tested on another sampling group of police officers in Nonthaburi, a large-sized province near Bangkok. The reason for choosing Nonthaburi for the pilot study was the similarity of geographic and demographic characteristics between these two provinces. Because of these similarities, the police organisational structures for the two locations were basically the same, except that Bangkok had a greater number of police officers. The researcher therefore considered Nonthaburi to be an appropriate location for testing the validity and reliability of the questionnaires.

Two hundred questionnaires in Thai were randomly distributed to the police officers in Nonthaburi but only 157 were returned (a 78.5% return rate). The exploratory factor analysis (EFA) procedure was used to test the factorial validity and the internal consistency of the scales. The results indicated that certain items should be deleted from the questionnaire due to their complexity, or low loadings on their target factors. For example, the affective wellbeing scale, which consists of two 12-item bi-polar scales developed by Warr (1990), was not appropriate due to the lack of discriminant validity between each polar, when translated into Thai. Because a more detailed psychometric assessment will be conducted on the main data set in the next chapter, the results of this pilot study will not be reported further. Suffice it to say that this pilot study was instrumental in selecting appropriate items for the final administration of the questionnaire to the main sample.

Sample

A total 1000 police officers were randomly selected from the Bangkok metropolitan area that worked in different areas, stations, and job specialisations. The 1000 questionnaires translated into Thai were distributed to the participants, and 816 questionnaires were returned, representing an excellent return rate of 81.6%. The participants were then randomly split into two sub-samples (see Figure 3.1). The first sub-sample, consisting of 400 participants, was used to conduct an exploratory factor analysis (EFA) in an attempt to examine the structure of the data which hypothetically consisted of job features, emotional labour, and psychological outcomes. The second sub-sample (n = 416) was randomly divided into two sub-groups each containing 208 participants. These two data sets were used for conducting a confirmatory factor analysis (CFA). One data set was designated the validation or calibration sample (Sample 1), and the other the cross-validation sample (Sample 2). The reason for creating two samples of n = 208 each for the CFA was based on Hoetler's recommendation (1983, cited in Sevastos, 1996, p. 5), who suggested that the *critical sample size* for the CFA ought to be at least 200. Also, Sevastos (1996) suggested that besides following this recommendation, the researcher should include some additional cases per sample, in case there were multivariate outliers that needed to be removed prior to the analysis. The present sample sizes of 208 should therefore generate reliable validation and cross-validation results.

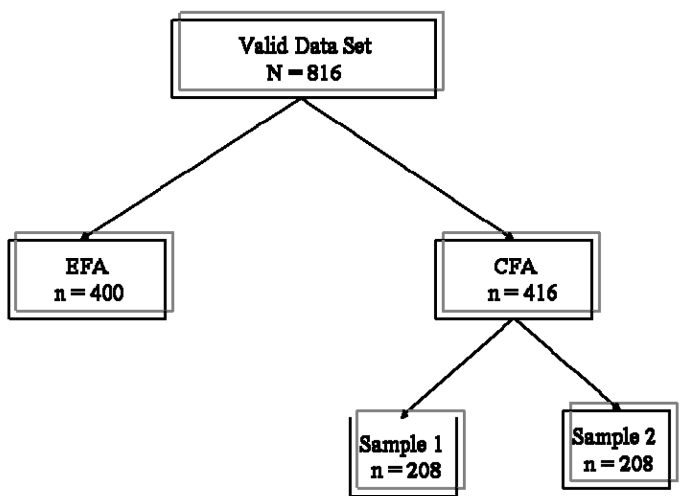

Figure 3.1. Derivation of samples.

Measures

Thirteen scales were used in this study. The original English version of the scales and the Thai translation were tested for similarity of meaning through the three-step process as explained earlier. Participants were required to complete the following scales and to provide some demographic information.

Demographic information and temperament. The demographic information of each participant is usually treated as a control variable. This part of the questionnaire sought information on age, gender, tenure, education, and temperament (i.e., positive and negative affectivity). Each participant's temperament was assessed by a 10-item scale. The original scale in English is known as the Positive-Negative Affectivity Scale (PANAS) developed by Watson, Clarke and Tellegen (1988). The PANAS includes a list of feelings and emotions measuring the positive and negative affectivity of participants. This scale reflects the basic characteristics of an individual's temperament and is prefaced by "how do you normally feel on average day?", followed by a list of negative and positive affective items, for example, "strong", "guilty", "enthusiastic". The items were measured on a 5-point Likert scale ranging from "not at all" to "extremely". Internal reliability (as measured by Cronbach's alpha) was .92 for the 5-item positive affectivity scale and .84 for the 5-item negative affectivity scale.

Job features. Since this research focuses on police officers' jobs, four appropriate job characteristics were included in the survey.

Job demands. The job demands of a police officer's job were of particular interest in this study and were assessed by examining the degree to which the pressure of work and time urgency dominated the work environment (Dollard et al., 2000). The Job Demands scale has been operationalised through the subjective workload measure developed by Martin and Wall (1989). It consists of five items, each with a five-point response format ranging from "to no extent" to "very great extent". Examples of items are "to what extent do you find yourself under constant pressure to do work on time?", and "to what extent do you find yourself having to work faster than you would like?" The alpha coefficient for the scale was .82.

Job control. For this measure the Job Control scale developed by Hackman and Oldhman (1980) was used. It consists of three items, each measured on a seven-point response format ranging from "very inaccurate" to "very accurate". Examples of items are "the job permits me to decide on my own how to go about doing work", "the job gives me considerable opportunity for independence and freedom in how I do the work". The alpha coefficient for these items was .89.

Supervisory & co-worker support. The original scale in English was based on the measure by Koys and De Cotiis (1991). Five items were selected for the level of supervisor support and three for the level of co-worker support. Each item used a seven-point response format ranging from "strongly disagree" to "strongly agree". Examples of the items for supervisory support are "my supervisor is interested in me getting ahead in the organisation", "my supervisor backs me up and lets me learn from my mistakes"; and for peer support "most of my co-workers can be relied upon to do as they say they will do". Alpha coefficients were .94 for the supervisor support scale and .92 for the co-worker support scale.

Emotional labour: This scale, developed by Brotheridge and Lee (2003), measures the extent of surface acting (three items) and deep acting (three items) that participants have been experiencing in their jobs. Each item uses a five-point response format ranging from “to no extent” to “very great extent”. Examples for the surface acting scale are “to what extent does your job require you to fake emotions that you do not really have?”, and “to what extent does your job require you to hide your true feelings about a situation?” Examples for deep acting are “to what extent do you make and effort to actually feel the emotions that you need to display to others?” and “to what extent do you try to actually experience the emotions that you must show?” Alpha coefficients were .82 for the surface acting scale and .87 for the deep acting scale.

Job satisfaction. This three-item scale was part of the Job Diagnostic Survey (JDS) developed by Hackman and Oldham (1975). The items are measured on a seven-point scale, ranging from “strongly disagree” to “strongly agree”. Examples of items are “generally speaking, I am very satisfied with this job”, and “I think this job satisfies me.” The alpha coefficient was .96.

Wellbeing. Initially, the researcher intended to use the affective bi-polar wellbeing scale developed by Warr (1990) for the present study. However, the earlier pilot study found that this scale did not replicate the original structure in the Thai sample, demonstrating high overlap between the two independent dimensions, and small Cronbach’s alphas. Therefore, instead of relying on Warr’s scale, it was decided to develop the affective wellbeing scale from items drawn from the General Health Questionnaire (GHQ).

Affective wellbeing. Six positive-worded items from the GHQ (Goldberg, 1972) were selected in order to assess the extent to which participants affectively reacted to recent events from their everyday life. Examples of these items are “have you recently been able to enjoy you normal day-to-day activities?”, and “have you recently been feeling reasonably happy, all thing considered?” The scoring system used in this study was modified from the original GHQ scale, which had the following 4-point response format ranging from “not at all” to “much more than usual”. Goldberg and Williams’ (1988) argued that the 4-point response format fails to differentiate between an individual with habitual symptoms from one free of psychological distress. Due to this difficulty in classifying the level of chronic illness and the research from several studies supporting the anomaly in the response format (Benjamin, Decalmer, & Haran, 1982; Finlay-Jones & Murphy, 1979; Whaley, Morrison, & Wall, 2005), the researcher decided to use a more comprehensive 6-point response format that is more appropriate for multivariate data analysis, especially for confirmatory factor analysis based on the maximum likelihood (ML) estimator (Saris, 1999). The categories for the six-point response format are “not at all”, “occasionally”, “some of the time”, “much of the time”, “most of the time” and “all of the time”. The alpha coefficient for the scale was .88.

Psychological distress. This scale was also developed from the General Health Questionnaire (GHQ) by Goldberg (1972). The original scale aims to screen psychiatric disorders by covering all aspects of psychological adjustment and distress. In this study, however, the interest was only on the level of psychological distress. Therefore, six items indicating distress were selected for this scale, with a six-point response format ranging from “not at all” to “all the time”. Examples of these items are “have you recently been feeling unhappy and depressed?”, and “have you recently been thinking of yourself as a worthless person?” The alpha coefficient for the scale was .84.

Hostility. This scale was developed for this study based on the approach taken by Johnson (1990) who defined hostility as a consequence of long term anger, suppression, and chronic frustration. Since this research aimed at examining both affective and behavioural aspects of hostility, the items comprising the scale assessed the frequency of aggressive emotions and behaviours. The items refer to feelings of anger or irritation and actions intending to hurt others, either emotionally or physically. This is a five-item scale with a six-anchor response format ranging from “never’ to ‘all the time’. Examples of items are “have you been feeling angry towards others for no reason?” and “have you been threatening others when feeling frustrated?” The alpha coefficient for the scale was .94.

Positive mood. This context-free scale was designed to assess participants’ state positive feelings, with items sourced from the PANAS scale mentioned earlier developed by Watson, Clarke and Tellegen (1988). However, unlike the PANAS that assesses temperament, this scale is prefaced with “how have you been feeling over the last two weeks?” followed by the list of adjectives representing positive mood (i.e., attentive, determined, active, strong, and enthusiastic). The scale had a 5-point response format ranging from “not at all” to “extremely”. The alpha coefficient for the scale was .95.

In summary, for this study the following thirteen scales were developed in Thai using items sourced from the English speaking research literature: positive and negative affectivity, job demands, job control, supervisory support, co-worker support, surface acting, deep acting, job satisfaction, affective wellbeing, psychological distress, hostility, and positive mood. Systematic procedures were applied to translate the items from English to Thai, including translation and back-translation of text by independent members of a committee, and group assessment by a committee as to the correctness of the meaning across both cultures. This was followed by a pilot study of 157 police officers and a preliminary evaluation of results, before the final construction of the survey instrument.

In the next chapter the psychometric properties of the scales (i.e., construct validity) will be more rigorously evaluated through EFA and CFA techniques.

CHAPTER IV

The Measurement Models of Wellbeing and Job Features

Introduction

This chapter presents the results of the statistical analysis performed to assess the first hypothesis of the study, which was the measurement models in the present study have an equivalent factorial latent structure across two sub-samples of Thai police officers. There were two main clusters of measurements used in this study. The first cluster reflects the five-dimensional model of job characteristic (i.e., job demand, job control and social support) and emotional labour (i.e., surface acting and deep acting). The second cluster reflects the seven-dimensional model of temperament (i.e., positive affectivity and negative affectivity) and psychological outcomes (i.e., job satisfaction, affective well-being, psychological distress, hostility and positive mood). In order to validate and cross-validate the psychometric properties of the 10 measures, confirmatory factor analysis (CFA) was performed using EQS 6.1.

Method

Participants

Participants were police officers randomly selected from various metropolitan police stations in Bangkok (the selection method is described in Chapter 3). From the 1000 questionnaires distributed, 820 questionnaires were returned, four of them with missing information. The sample demographics are reported in Table 4.1.

Table 4.1

Sample Characteristics (N = 816)

Variable	Count	Percentage
Age		
• Under 25	32	3.9
• 25 – 40	481	59.0
• 40 and above	303	37.1
Gender		
• Male	728	89.2
• Female	88	10.8
Highest education		
• High school	251	30.8
• Diploma	106	13.0
• Bachelor	387	47.4
• Postgraduate	72	8.8
Tenure		
• Less than 10 years	262	32.1
• 10 – 20 years	323	39.6
• More than 20 years	231	28.3

As shown in Table 4.1, the majority of participants were between 25 and 40 years old (59.0%), and mostly male (89.2%). Almost half (47.4%) had a bachelor's degree and more than one third (39.6%) had been working in the police force between 10 and 20 years.

Before testing the hypothesis, the validation and cross-validation of the measurement instruments, which had been translated from English into Thai, had to be established. To this end, the participants were randomly split into two sub-samples. The first sub-sample (n = 400) was used to conduct an exploratory factor analysis (EFA) in order to determine which items were suitable for retaining (i.e., items that loaded > .40 exclusively on their target factor) for confirmatory factor analysis (CFA). The sub-sample consisting of 416 participants was then divided into two sub-groups each containing 208 participants. These two sup-groups were used for the CFA.

Data Analysis

Exploratory Factor Analysis

Exploratory factor analysis (EFA) attempts to 'shed some light' on the latent structure (factors) that might 'drive' the observed variables (item responses). Specifically, the aim of EFA is to identify the minimal number of factors that are needed to generate the inter-item correlations. For the purposes of developing measurement instruments, EFA is useful for screening out problematic items, and for determining how the items relate to (or 'load on') the underlying factor structure.

Two EFAs were conducted on the subgroup of 400 police officers (from a total sample of 816 participants). The first analysis was performed to estimate the factor loadings of items from the job feature and emotional labour scales (i.e., job demands, job control and social support and surface and deep acting). The second analysis estimated the factor loadings of items from the temperament and psychological outcomes scales (i.e., positive and negative affectivity, and job satisfaction, affective wellbeing, psychological distress, hostility, and positive mood).

The maximum likelihood (ML) extraction method was used as the preferred option, due to its wider range of diagnostic fit indices than other alternative approaches (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Since high inter-correlations among the observed variables were expected, the oblique factors Promax rotation was chosen as recommended by Thompson (2004). Also, consistent with the recommendations of Gerbing and Hamilton (1996), the researcher used an exploratory factor analysis in one sample (n = 400) as a precursor to a confirmatory factor analysis in another sample (n = 416). The refinement of the measurement instruments was the result of an iterative process involving CFA in which items that loaded highly on a specific construct were retained, and items that were poor candidates for their target factors were eliminated.

Table 4.2 shows the results of the analysis that identified six dimensions with an eigenvalue grater than 1, accounting collectively for 75.92% of the variance. All six factors were considered reliable after rotation and an examination of their loadings indicated that they presented conceptually distinct aspects of job features and emotional labour.

Table 4.3 shows the results of the analysis that identified seven dimensions of psychological wellbeing with an eigenvalue greater than 1, and collectively accounted for 76.831% of the variance. An examination of the pattern matrix showed that the factor loading in item PD1 (“lost much sleep over worry” - from the psychological distress scale) was only .363 and was considered low relative to all the other items in the analysis. Therefore, this item was excluded from subsequent analyses.

It must be emphasized that the systematic approach applied in translating the items from English into Thai, coupled with the preliminary analysis of data from the pilot study, resulted in the selection of a final pool of items that were more than adequate in defining the constructs under investigation.

In the next phase, the more robust confirmatory factor analysis (CFA) – conducted through EQS 6.1 – was used to determine the dimensionality of the measures. The procedure involved the calibration and cross-validation of the instruments across two randomly selected and independent groups of police officers.

Table 4.2

Exploratory Factor Analysis of Job Features and Emotional Labour. Pattern Matrix of Six Dimensional Solution

Variables	Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Supervisor support	SS1	.914					
	SS2	.929					
	SS3	.947					
	SS4	.750					
	SS5	.782					
Job Demands	JD1		.495				
	JD2		.753				
	JD3		.806				
	JD4		.646				
	JD5		.734				
Job Control	JC1			.868			
	JC2			.878			
	JC3			.821			
Co-worker Support	CS1				.758		
	CS2				.984		
	CS3				.860		
Deep Acting	DA1					.684	
	DA2					.894	
	DA3					.829	
Surface Acting	SA1						.588
	SA2						.955
	SA3						.696

Table 4.3

Exploratory Factor Analysis of Psychological Wellbeing. Pattern Matrix of Seven Dimensional Solution

Variables	Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Hostility	H1	.722						
	H2	.875						
	H3	.806						
	H4	.989						
	H5	.937						
Positive Affectivity	PA1		.560					
	PA2		.759					
	PA3		.869					
	PA4		.906					
	PA5		.886					
Positive mood	PM1			.881				
	PM2			.841				
	PM3			.880				
	PM4			.869				
	PM5			.783				
Negative Affectivity	NA1				.642			
	NA2				.631			
	NA3				.739			
	NA4				.814			
	NA5				.746			
Affective Wellbeing	WLB1					.685		
	WLB2					.858		
	WLB3					.821		
	WLB4					.837		
Job Satisfaction	JS1						.950	
	JS2						.972	
	JS3						.871	
Psychological Distress	PD1							.363
	PD2							.842
	PD3							.868
	PD4							.797

Confirmatory Factor Analysis

In order to test the hypotheses related to the factorial structure of the instruments a CFA was used. The objective of this analysis was to assess the validity and cross-validity of a factorial structure across two groups. The aim was to determine whether the items, which were designed to measure a particular dimension, actually did so and to what extent. In other words, CFA was performed to test the hypothesis that a particular linkage between the observed variables (items) and their latent variables did in fact exist.

Byrne (1994) noted that a confirmatory factor analysis of an instrument is highly appropriate when it is applied to a measure that has been fully developed and has had its factor structures validated. In general, items of a measuring instrument are considered representatives of a specific factor. Therefore, those items were expected to load highly onto their target factor. Drawing on theoretical knowledge and empirical research, researchers hypothesise the linkage pattern a priori, and then test their hypothesis statistically. The usefulness of the CFA procedure, therefore, depends on the ability to specify a priori a factorial structure that is grounded in theory, empirical research, or both (Byrne, 1994).

A CFA was carried out using EQS 6.1. One of the assumptions underlying the structural equation modelling procedure is multivariate normality of the data. This was tested using Mardia's multivariate test. Mardia's normalized estimate of the set of dependent variables was 43.054 (for Sample 1) and 38.212 (for Sample 2), whereas, the estimation of the set of independent variables was 39.273 (for Sample 1) and 41.412 (for Sample 2). Bentler (2005) has suggested that in practice, a value > 5.00 is indicative of multivariate non-normality. Because the present estimates were far greater than the recommended value, it was necessary to apply the Satorra-

Bentler chi-square correction for multivariate non-normality. Satorra and Bentler (1988) developed a scaling correction for chi-square when the distributional assumptions of the data are violated. Its computation takes into account the model, the estimation method, and the sample kurtosis values. The Satorra-Bentler Scaled Statistic (S-Ḅχ^2) is considered the most reliable test statistic for evaluating covariance structure models under various data distributional conditions and sample sizes (Byrne, 1994).

Initially, the factorial structure of the models was tested in Sample 1. The best-fitting model was then compared for equivalence across Samples 1 and 2. Evidence of equivalence was based on tests of invariance of parameters across the two samples; that is, the estimation of parameters in Sample 2 was constrained to be equal to the values of the unconstrained Sample 1 parameters. A series of chi-square difference tests between two nested models was then performed.

Byrne (2006) suggested that in testing for invariance across two samples, equality constrains are imposed on particular parameters. Therefore, the data for all samples must be analysed simultaneously to obtain efficient estimates. The pattern of fixed and free parameters nevertheless remains consistent with the baseline model specification for each sample. The variance of each factor was fixed at 1 and its co-variances were calculated freely. The maximum likelihood (ML) method with the chi-square statistical indicator was used to assess whether the hypothesised factor structure consistently emerged across two sub-groups (Sevastos, 1996). Initially baseline models were established (i.e., models that had the same structural patterns across samples) for both of the current models: the seven-factor wellbeing measurement model (which included five dimensions of psychological outcomes and two dimensions of temperament), and the six-factor job features measurement model (which included four dimension of job characteristics and two dimensions of emotional labour). These models were then tested for equivalence across the two sub-samples using CFA.

The multi-group model was created to serve two important functions. First, it allows for invariance tests to be conducted across the two groups simultaneously. Second, in testing for invariance, the fit of the configuring model provides the baseline model values to be used to compare against all subsequently specified invariance models (Byrne, 2006). If a non-significant difference in the chi-square value is yielded from the comparison between the baseline model and the configuring model, then this could be regarded as evidence of model equivalence across two samples (Bentler, 2005).

Tabachnick and Fidell (2001), however, noted that it is inappropriate to evaluate two competing models based solely on the chi-square statistic, because this statistic is sensitive to sample size. This statistic is likely to produce a significant result in a large sample, suggesting that the model fits the data poorly, even if the discrepancy between the estimated model and the data is very small. If the sample size is large enough, the chi-square test will be overpowered and almost any model will be rejected (Chu, 2002).

Assessment of model fit

The following precautions have been taken to guard against the multivariate non-normality of the data set, and the limitations of using the chi-square statistic for evaluating model fit.

In order to deal with the multivariate non-normality of the two sets of data, the Satorra-Bentler scaled statistic (SBχ^2) available in the EQS program was used. As noted by Chou, Bentler, and Satorra (1991), the SB χ^2 statistic has been shown to approximate more closely the usual test statistic and to perform as well as, or better than, the usual asymptotically distribution-free (ADF) methods, generally recommended for multivariate non-normal data. These results have been further supported by a Monte-Carlo study (Curran, West, & Finch, 1996) that examined alternative approaches, such as the normal theory maximum likelihood chi-square (MLχ^2), and Browne's asymptotic distribution free chi-square (ADFχ^2), and concluded that the SB χ^2 "behaved extremely well in nearly every condition across sample size, distribution, and model specification. Additionally, the SB χ^2 had the desirable property of simplifying to the ML χ^2 under multivariate normality" (p. 27). Curran et al. recommended that researchers report both the ML χ^2 and the SB χ^2, when there is reason to suspect that the data are not multivariate normal.

Reliance on the chi-square statistic alone for model evaluation is not recommended, as this statistic can attain significance in large samples leading to model rejection even when the model fits data reasonably well (Bentler & Bonnett, 1980). EQS therefore calculates several additional fit indices. For this analysis, the "2-index presentation strategy" (Hu & Bentler, 1999, p. 5) was adopted to minimise Type I and Type II error rates. The two indices selected are the Comparative Fit Index (CFI), based on the Bentler-Bonett normed fit index with an adjustment for degrees of freedom in the model, and the standardised root mean square residual (SRMR). EQS also calculates and reports also a robust Comparative Fit Index (robust CFI) that corrects for multivariate non-normality in the data. The CFI ranges from zero to 1, with a recommended cut-off value of 0.95 as an indication of acceptable fit, while a cut-off close to 0.08 for SRMR is deemed acceptable (Hu & Bentler, 1999). The CFI and SRMR were selected, because the first can assist in the identification of model misspecifications in factor loadings, while the second can assist in the identification of model misspecifications in factor covariances.

A supplementary third index, the root mean square error of approximation (RMSEA), was also used. Unlike the CFI and the SRMR, RMSEA provides information on the precision of the estimate through confidence interval (CI). Moreover, the RMSEA is relatively independent of sample size. An RMSEA value of 0.05 or less indicates a good fit, while a value approaching 0.08 would represent a reasonable fit (Steiger, 1989), although Hu and Bentler (1999) have more recently recommended a cut-off value of 0.06 for a reasonable fit. RMSEA values above 0.10 indicate poor fit.

Because point estimates – such as the CFI, the SRMR, and the RMSEA – cannot capture the degree of imprecision in the estimation on model fit, MacCallum, Browne, and Sugawara (1996) have presented a framework for evaluating fit based on confidence intervals for the RMSEA. When the entire CI of the RMSEA is below 0.05 the decision is made to accept the hypothesis of "close fit". By contrast, when the entire CI interval is above 0.05, the hypothesis of "close fit" is rejected. When the CI "straddles" 0.05 the decision is more ambiguous.

In order to reliably test a hypothesis about model fit adequate statistical power is required. MacCallum et al., have provided calculations of sample size for an alpha level of 0.05, and a power of 0.08. All model fit evaluations will be based, therefore, on the MacCallum et al. (1996) framework, after demonstrating adequate power and sample size.

Therefore, the additional incremental fit indices were included into the model fit indicators. The three indices, which were selected for this study, were the comparative fit index (CFI), the standardised root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). Hu and Bentler (1999) suggested that the CFI and the SRMR should be selected because the first can assist in the identification of model misspecifications in a factor loading, while the second identifies misspecifications in a factor covariance. The CFI ranges from zero to one. If CFI values higher than .90, it is considered as an acceptable model fit. If it is higher than .95, it constitutes a good model fit. The SRMR also ranges from zero to one. If SRMR values lower than .08, the model is deemed acceptable (Medsker, Williams, & Holahan, 1994). For the RMSEA, it has been suggested that values < .05 constitute good fit, values in the .05-.08 range acceptable fit, values in the .08-.10 range marginal fit, and value > .10 poor fit (Browne & Cudeck, 1992).

Results

The measurement model identified through the EFA was the input for the confirmatory factor analysis. The seven-dimensional wellbeing model, consisting of 30 items, and the six-dimensional job features model, consisting of 22 items, were tested separately. Pictorial representations of the two models are shown in Figures 4.1 and 4.2.

Two independent sub-samples were used to test the convergent validity of the measures. Convergent validity is the overlap between alternative measures that are intended to tap the same construct but have different sources of irrelevant, undesired variation (Judd, Smith, & Kidder, 1991). This means that indicators designed to reflect the same construct should overlap with each other or share a good deal of variance (Chu, 2002). The results show that all items load substantially onto their target factors. Convergent validities for the 30-item seven-dimensional wellbeing model, and the 22-item six-dimensional job features model were statistically significant in both sub-groups as shown in Tables 4.4 and 4.5. The high Z scores indicate that all items were related to their target constructs and, therefore, important to the model. For the seven-dimensional model 67% and 60% of items for Samples 1 and 2 respectively had coefficients with values exceeding .80; for the six-dimensional model, the percentage of items with high values was 77% and 64% for Samples 1 and 2 respectively. Items with coefficients > .80 are considered "marker" variables, because they help define the construct accurately (Tabachnick & Fidell, 1989, p. 602). Across the entire 52 item pool for Samples 1 and 2 (i.e., 104 coefficients), there was only one item that loaded on its target factor < .60 (i.e., λ = .512).

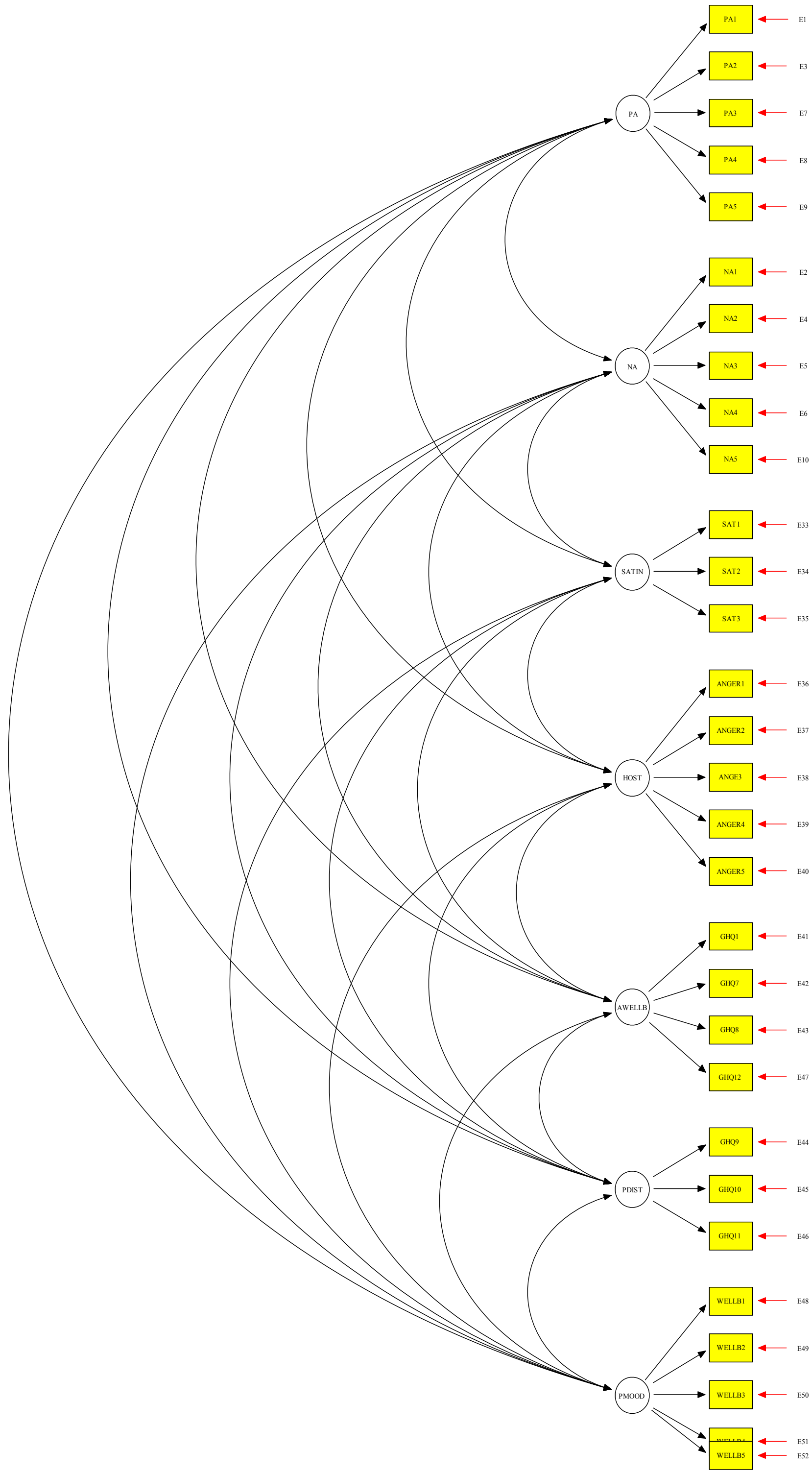

Figure 4.1. Pictorial presentation of the seven-dimensional measurement model.

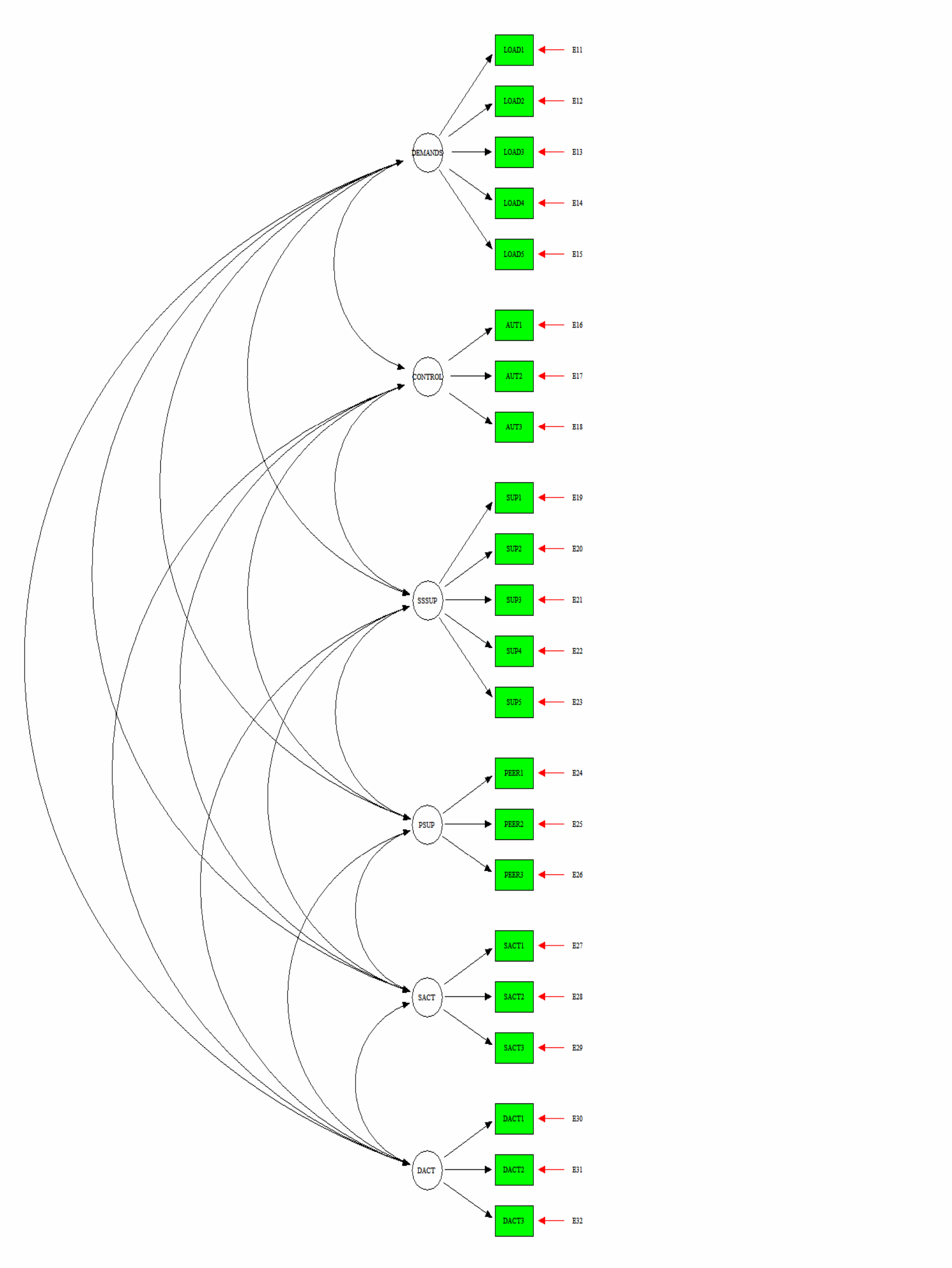

Figure 4.2. Pictorial presentation of the six-dimensional measurement model.

Table 4.4

Convergent Validity of the 30-Item Wellbeing Scales Showing Standardized Coefficients and Standardized Scores

Factor	Item Number	Standardized Coefficients (Sample 1)	*Z* (Sample 1)	Standardized Coefficients (Sample 2)	*Z* (Sample 2)
Positive Affectivity	9	.786	13.167	.707	11.594
	11	.836	12.131	.775	12.924
	15	.879	14.387	.793	13.426
	16	.863	12.743	.867	15.621
	17	.893	14.877	.859	16.655
Negative Affectivity	10	.699	11.243	.726	12.831
	12	.739	11.348	.754	11.597
	13	.633	10.842	.782	16.040
	14	.753	12.191	.754	13.610
	18	.740	12.612	.728	13.616
Job Satisfaction	44	.937	14.720	.932	15.728
	45	.978	17.00	.960	15.256
	46	.910	16.821	.951	17.069
Hostility	55	.673	10.770	.699	10.958
	56	.814	13.000	.864	13.369
	57	.902	14.910	.873	16.347
	58	.902	17.658	.898	15.135
	59	.848	12.210	.883	12.882
Affective well-being	61	.655	8.114	.717	9.626
	67	.812	13.442	.908	18.078
	68	.831	12.708	.836	11.938
	72	.804	12.131	.799	11.263
Psychological Distress	69	.763	12.252	.853	15.701
	70	.881	19.678	.894	14.982
	71	.781	11.664	.795	11.963
Positive Mood	73	.886	16.101	.915	16.392
	74	.927	17.850	.931	16.338
	75	.864	16.709	.911	14.667
	76	.821	13.838	.863	14.490
	77	.831	13.948	.864	14.601

Table 4.5

Convergent Validity of the 22-Item Job Feature Scales Showing Standardized Coefficients and Standardized Scores

Factor	Item Number	Standardized Coefficients (Sample 1)	*Z* (Sample 1)	Standardized Coefficients (Sample 2)	*Z* (Sample 2)
Workload	19	.608	8.387	.512	6.409
	20	.789	12.673	.804	13.682
	21	.843	14.527	.842	13.341
	22	.730	10.066	.692	8.766
	23	.826	14.381	.791	13.685
Job Control	27	.826	12.100	.791	10.144
	28	.857	13.523	.853	13.592
	29	.864	12.786	.924	13.561
Supervisor Support	30	.859	18.278	.884	20.375
	31	.877	15.625	.909	20.140
	32	.886	18.139	.897	17.691
	33	.735	10.867	.749	10.164
	34	.810	13.707	.870	16.089
Co-worker Support	35	.852	13.009	.902	14.030
	36	.934	16.129	.927	15.959
	37	.865	13.957	.810	12.477
Surface Acting	38	.801	12.431	.745	9.486
	39	.873	15.380	.847	13.255
	40	.830	13.956	.834	12.969
Deep Acting	41	.854	13.907	.737	9.570
	42	.821	11.698	.918	15.261
	43	.741	8.628	.751	9.240

The wellbeing and job feature models hypothesize that responses to the 30 and 22 items may be explained by seven and six first-order factors respectively. An appropriate “non trivial” model (Sobel & Bohrnstedt, 1985), with which to compare to the seven and six-dimensional models, is that of a single dimensional model. If such one-dimensional model was to provide a better fit to the data, than either the seven or six-dimensional model, then the appropriateness of measuring seven or six separate factors could be questioned as being less parsimonious.

The EQS 6.1 structural equation model software was used to estimate in each instance three models: a “null” model that had no structure (i.e., each item is hypothesized to be uncorrelated with all other items), a one-dimensional model, and a seven-dimensional model. All analyses were based on the maximum likelihood (ML) method. The input for the analyses was the covariance matrix for the items. The variance of each of the constructs was fixed at 1, while their covariances were calculated freely. To test the hypothesized models only random error (i.e., no systematic error in the data was assumed) was taken into consideration. To test the fit of the two measurement models of wellbeing and job features, CFAs were performed initially with the designated calibration sample (Sample 1).

The results of the seven-dimensional wellbeing model (see Table 4.6) show that the null model chi-square, with 435 degree of freedom, was 4404.166. In comparison to the one- and seven-dimensional models, the null model was easily rejected. Also, the one-dimensional model, showed a poor fit to the data relative to the seven-dimensional model (χ^2 [405] = 3291.293, versus χ^2 [384] = 748.153) even when the reduction in degrees of freedom is taken into consideration. Specifically, the one-dimensional model with CFI = .408, SRMR = .181 and RMSEA = .172, does not meet any of the cut-off criteria for acceptable fit. By contrast, the seven-dimensional model meets the criteria for "good" fit on all three indices (i.e., CFI = .964, SRMR = .057, RMSEA = .034).

Examination of the values for the chi-square for the one- and seven-dimensional models show improvements with the Satorra-Bentler scaled statistic that adjusts for multivariate non-normality of data. For the best-fitting seven-dimensional model the minimum fit function chi-square statistic was reduced from 748.153 to 525.249 when the S-B χ^2 scaled statistic was applied to the data.

Similar pattern of results are shown for the CFA analysis with Sample 2 (the designated cross-validation sample). In every instance the results mirror those obtained for Sample 1; that is, the seven-dimensional model is a far superior model to the null model and the one-dimensional model with lower chi-square values relative to the degrees of freedom (4,984.634, 405 df, versus 732.339, 384 df), and incremental fit indices that meet the criteria for acceptable model fit (see Table 4.6).

The results of the six-dimensional job features model (see Table 4.7) show that the null model chi-square, with 231 degree of freedom, was 2348.320. In comparison to the one- and six-dimensional models, the null model was easily rejected. Also, the one-dimensional model, showed a poor fit to the data relative to the six-dimensional model (χ^2 [209] = 3353.038, versus χ^2 [194] = 363.869) even when the reduction in degrees of freedom is taken into consideration. Specifically, the one-dimensional model with CFI = .311, SRMR = .228 and RMSEA = .187, does not meet any of the cut-off criteria for acceptable fit. By contrast, the six-dimensional model in every instance meets the cut-off criteria for "good" fit (i.e., CFI = .961, SRMR = .045, RMSEA = .046).

Table 4.6

Calibration Analysis of the Seven-Construct Wellbeing Measurement Model Based on Robust Statistics

Models	MFFχ^2	df	S-Bχ^2	CFI	SRMR	RMSEA (90%CI)
Sample 1 (n = 196)						
Null	4404.166	435	--	--	--	--
One-Dimensional	3291.293	405	2753.990	.408	.181	.172 (.166, .178)
Seven-Dimensional	748.153	384	525.249	.964	.057	.034 (.034, .052)
Sample 2 (n = 194)						
Null	4450.782	435	--	--	--	--
One-Dimensional	4984.634	405	2930.230	.371	.196	.180 (.173, .185)
Seven-Dimensional	732.339	384	529.168	.964	.053	.044 (.035, .053)

Note 1: Mardia's Normalized estimate for Sample1 = 43.054 and for Sample 2 = 38.212, necessitated the application of the Satorra-Bentler chi-square correction for non-multivariate normality of data. MFF χ^2 = minimum fit function chi-square.

Note 2: CFI = Comparative Fit Index; SRMR = Standardized root mean square residual; RMSEA = Root mean square error of approximation; CI = Confidence intervals.

Table 4.7

Calibration Analysis of the Six-Construct Job Features Measurement Model Based on Robust Statistics

Models	MFF χ^2	df	S-B χ^2	CFI	SRMR	RMSEA (90%CI)
Sample 1 (n = 201)						
Null	2348.320	231	--	--	--	--
One-Dimensional	3353.038	209	1667.133	.311	.228	.187 (.178, .195)
Six-Dimensional	363.869	194	277.422	.961	.045	.046 (.033, .058)
Sample 2 (n = 200)						
Null	2310.484	231	--	--	--	--
One-Dimensional	2584.097	209	1402.684	.426	.194	.169 (.161, .177)
Six-Dimensional	433.539	194	285.547	.956	.054	.049 (.036, .060)

Note 1: Mardia's Normalized estimate for Sample1 = 40.270 and for Sample 2 = 48.1942, necessitated the application of the Satorra-Bentler chi-square correction for non-multivariate normality of data. MFF χ^2 = minimum fit function chi-square.

Note 2: CFI = Comparative Fit Index; SRMR = Standardized root mean square residual; RMSEA = Root mean square error of approximation; CI = Confidence intervals.

Examination of the values of the chi-square statistic, for the one- and six-dimensional models, show improvements with the Satorra-Bentler scaled statistic that adjusts for multivariate non-normality of data. For example, for the best-fitting six-dimensional model the minimum fit function chi-square statistic was reduced from 363.869 to 277.422 when the S-B χ^2 scaled statistic was applied to the data.

A similar pattern of results is shown for the CFA analysis with Sample 2 (the designated cross-validation sample). In every instance the results are similar to those obtained for Sample 1; that is, the six-dimensional model is a far better model than the null model and the one-dimensional model with lower chi-square values relative to the degrees of freedom (2,584.097 209 df, versus 433.539, 194 df), and fit indices that meet the criteria for acceptable model fit (see Table 4.7).

Invariance Analysis

To test for the equivalence of the two models across two sub-samples, a multi-sample analysis was performed. Following the establishment of the best baseline model for each group (Byrne, Shavelson, & Muthen, 1989), tests of model invariance across samples proceed in a hierarchical fashion (C. Smith, Tisak, Bauman, & Green, 1991). Invariance is first sought between the baseline model, and a model that has item-factor loadings constrained in the replication sample(s). If the results of the comparison are not statistically significant (i.e., the constrained parameters are equal across groups), then a comparison between this model and one where the factor covariances are also constrained is performed (Bentler, 1995). A statistically non-significant result between the two nested models may be taken as evidence that the model is invariant across samples.

A more stringent test is to constrain, in addition to the loadings and covariances among factors, the error variances of the observed variables, although some researchers (e.g., Bentler, 1995; Byrne,1994) have argued that this test is far too stringent. Byrne (2006) also argued that imposing equality constraints on the error covariance represents an overly restrictive model and is of much less importance. Therefore, only the factor loadings and the factor covariances will be constrained in this study.

Table 4.8 shows the χ^2 difference tests with the associated degrees of freedom for the nested wellbeing measurement model based on the multi-sample analysis. After imposing all constraints for the invariance of loadings across groups, the χ^2 increment from the baseline model was not statistically significant ($\Delta\chi^2$ [30] = 20.341, $p > .05$). Holding the loadings across groups invariant, and constraining the factor covariances to be equal as well, did not result in a statistically significant difference between nested models ($\Delta\chi^2$ [21] = 22.296, $p > .05$). The results are no different if the Satorra-Bentler scaled statistic (S-Bχ^2) is applied to the difference tests, which takes into consideration the multivariate non-normality of the data.

All incremental fit indices for the two nested models were above the recommended cut-off threshold levels. Specifically, for the invariance of loadings the CFI = .965, and the SRMR = .062; the RMSEA = .030 with confidence intervals ranging from .025 to .034 indicating an excellent fit to the data. When the covariances were constrained equal across groups, in addition to the constrained loading, the results were equally impressive with CFI = .966, SRMR = .068, and RMSEA = .029 with a confidence interval ranging from .025 to .034.

Table 4.8

Cross-Validation Analysis of the Seven-Construct Wellbeing Measurement Model Based on Robust Statistics

Models	MFF χ^2	df	$\Delta\chi^2$	Δdf	S-B χ^2	ΔS-B χ^2	Δdf	CFI	SRMR	RMSEA (90%CI)
Null	8855.775	870	--	--	--	--	--	--	--	--
Baseline	1484.993	768	--	--	1054.364	--	--	.964	.055	.031 (.026, .035)
Loadings Invariant	1505.334	798	20.341^{ns}	30	1076.524	17.843^{ns}	30	.965	.062	.030 (.025, .034)
Loadings + Covariances Invariant	1527.630	819	22.296^{ns}	21	1093.508	16.570^{ns}	21	.966	.068	.029 (.025, .034)

Note 1: Mardia's Normalized estimate for Sample1 = 43.054 and for Sample 2 = 38.212, necessitated the application of the Satorra-Bentler chi-square correction for non-multivariate normality of data. MFF χ^2 = minimum fit function chi-square. ΔS-B χ^2 = Scale difference test is based on the Satorra & Bentler (2001) formula.

Note 2: CFI = Comparative Fit Index; SRMR = Standardized root mean square residual; RMSEA = Root mean square error of approximation; CI = Confidence intervals; ns = not statistically significant; Critical values of χ^2 (30) = 43.77, p = .05; and χ^2 (21) = 32.67, p = .05.

Table 4.9

Cross-Validation Analysis of the Six-Construct Job Features Measurement Model Based on Robust Statistics

Models	MFF χ^2	df	$\Delta\chi^2$	Δdf	S-B χ^2	Δ S-B χ^2	Δdf	CFI	SRMR	RMSEA (90%CI)
Null	4658.009	462	--	--	--	--	--	--	--	--
Baseline	817.149	388	--	--	563.3618	--	--	.958	.050	.048 (.039, .056)
Loadings	832.510	410	15.361^{ns}	22	579.0164	12.655^{ns}	22	.960	.055	.045 (.036, .054)
Loadings + Covariances	852.240	425	19.730^{ns}	15	592.0179	13.264^{ns}	15	.960	.067	.044 (.035, .053)

Note 1: Mardia's Normalized estimate for Sample1 = 43.054 and for Sample 2 = 38.212, necessitated the application of the Satorra-Bentler chi-square correction for non-multivariate normality of data. MFF χ^2 = minimum fit function chi-square. ΔS-B χ^2 = Scale difference test is based on the Satorra & Bentler (2001) formula.

Note 2: CFI = Comparative Fit Index; SRMR = Standardized root mean square residual; RMSEA = Root mean square error of approximation; CI = Confidence intervals; ns = not statistically significant; Critical values of χ^2 (22) = 34, p = .05; and χ^2 (15) = 25.00, p = .05.

The results in Table 4.8 may be taken, therefore, as evidence that the seven-dimensional wellbeing model could be generalised to other Thai police officer samples.

Table 4.9 shows the χ^2 difference tests with the associated degrees of freedom for the nested job features measurement model based on the multi-sample analysis. After imposing all constraints for the invariance of loadings across groups, the χ^2 increment from the baseline model was not statistically significant ($\Delta\chi^2$ [22] = 15.361, $p > .05$). Holding the loadings across groups invariant, and constraining the factor covariances to be equal as well, did not result in a statistically significant difference between nested models ($\Delta\chi^2$ [15] = 19.730, $p > .05$). The results are no different if the Satorra-Bentler scaled statistic (S-Bχ^2) is applied to the difference tests, which takes into consideration the multivariate non-normality distribution of the data. All incremental fit indices for the two job features nested models were above the recommended cut-off threshold levels. Specifically, for the invariance of loadings the CFI = .960 and the SRMR = .055; the RMSEA = .045 with confidence intervals ranging from .036 to .054 indicating an adequate fit to the data. When the covariances were constrained equal across groups, in addition to the constrained loading, the results did not show any great variation with CFI = .960, SRMR = .067, and RMSEA = .044 with a confidence interval ranging from .035 to .053. Overall, the invariance analysis suggests that the job features model can also be generalised to other samples of Thai police officers.

Summary

The purpose of this part of the study was to examine the psychometric properties of a seven-dimensional wellbeing model and a six-dimensional job features model before proceeding with the analysis of the relationship between these two sets of constructs.

On the basis of information gained from exploratory factor analysis on an independent large sample, confirmatory factor analysis was applied to assess the factor structure of the measures. Initially, two independent sub-samples were used to test the convergent validity of the measures. The results showed that all observable indicators loaded significantly on their latent constructs at the $p < .05$ level (see Table 4.4 and 4.5), thus providing evidence of convergent validity. Following this assessment the overall measurement model fit was examined. The seven-construct wellbeing measurement and the six-construct job feature measurement models were tested separately using EQS 6.1, a program that takes into consideration the multivariate non-normality of the data and makes appropriate adjustments. The primary interest was to examine how well the models described the sample data by considering the Satorra-Bentler chi-square statistic and other model fit indices (e.g., CFI, SRMR and RMSEA).

Both the wellbeing model and the job features model achieved reasonable fit to the data when they were tested. The results showed consistencies across two independent samples when loading parameters were constrained to be equal. The imposition of further constraints, in the form of factor covariances, indicated that both models were invariant across samples and, therefore, valid.

CHAPTER V

The Association between Work Features and Psychological Outcomes

Introduction

This chapter presents the results relating to the second hypothesis of the study that the police officers' emotional labour (i.e. surface acting and deep acting) will be a moderator of the relationship between job characteristics (i.e. job demands, job control and social support) and psychological outcomes (i.e. job satisfaction, affective wellbeing, psychological distress, hostility, and positive mood), after controlling for demographic variables (i.e. age, gender, education, tenure and temperament). The chapter includes sections on methodology, information on the participants and data analyses, followed by the results and a discussion of the substantive results.

Method

Participants

All participants in the study (N = 816) were included in the analysis. The demographic characteristics of the participants were shown in Table 4.1, Chapter 4.

Data analytic strategies

Two main analyses are described in this chapter. First, a canonical correlation analysis was performed to investigate the relationship between the set of independent variables (e.g. job features) and the set of dependent variables (e.g. job satisfaction, affective wellbeing, etc.). The objective of this procedure was to relate the two sets of variables in a single multivariate analysis, rather than conduct separate analyses with each dependent variable. The present procedure, therefore, offers a more parsimonious account of the relationships, and addresses the issue of shared variance due to the strong inter-correlations within the job features and wellbeing variables (Donatelli & Sevastos, 2007). Following the derivation of statistically significant dimensions (i.e., canonical variates) based on the weighting canonical procedure, which summarise the relationships between the two sets of variables, moderated regression analyses were carried out to investigate the relationships between the independent variables and the canonical variates by testing for statistically significant of linear, curvilinear, and interaction terms.

A canonical correlation is performed to study relationships between two variable sets when each variable set consists of at least two variables (Thompson1984). The first set of variables is a set of independent variables and the other is a set of dependent variables. Each set may be considered a latent variable driven by measured indicator variables. Canonical correlation analysis can provide information on the nature of the links or patterns of interdependency that join the two sets, the number of links between sets and the extent to which the variance in one set is redundant or conditional on the other set (Levine, 1977). Three concepts are crucial to understanding canonical correlation: variables, canonical variates, and pairs of canonical variates.

Variables refer to the dimensions measured in research. Canonical variates are linear combinations of variables, one combination on the independent variable side and a second combination on the dependent variable side. These two combinations form a pair of canonical variates. A canonical variate can be assessed on the strength of its relation to the measured variables in its own set, or the set of other canonical variates. The canonical correlation is optimised in such a way that the linear correlation between the two latent variables is maximized.

To determine how many variates are needed to account for the relationship, the analysis performs a chain of significant tests. The first test is for all pairs taken together, and is a test of independence between two sets of variables. The second test is for all pairs of variates with the first and most important pair of canonical variates removed, while the third is assessed with the first two pairs removed, and so forth. If the first test, but not the second, reaches significance, then only the first canonical variate pair is interpreted. If the first and second tests are significant but the third is not, the first two variates pairs are interpreted, and so on (Tabachnick & Fidell, 2001).

Similar to ordinary correlation, the canonical correlation squared is the percent of variance in the dependent set explained by the independent set of variables along a given dimension. It represents the overlapping variance between a pair of canonical variates. Tabachnick and Fidell (2001) suggest that researchers should not interpret pairs with a canonical correlation lower than .30 due to the small percentage of overlap in variance (i.e., < 10%). Another important index that researchers should take into account is redundancy, which is the overlap between a variate and the other set of variables. It is measured by multiplying the percent of variance which is extracted by a canonical variate by the canonical correlation for the pair. High redundancy signifies high ability of prediction and is equivalent to R-squared from multiple regression. Because canonical variates are orthogonal, redundancies for a set of variables are also added across canonical variates to get a total for the dependent variable set to the independent variable set, and vice versa (Tabachnick & Fidell, 2001).

The standardized canonical coefficients, also called the canonical function coefficient or the canonical weight, are used to assess the relative importance of a variable's contribution to a given canonical correlation. Analogous to beta weights in regression analysis, the canonical coefficients are the standardized weights in the linear equation of variables, from which the canonical variate is derived. The ratio of canonical weights is the ratio of the contribution of the variable to the given canonical correlation, controlling for other variables in the equation.

Although canonical correlation analysis provides a good approximation of the relationship between two sets of variables, it does not identify the level of statistical significance of individual variables. Also, canonical correlation indicates only the linear relationship of the variable sets and neglects to investigate any curvilinear relationships or interactions between two or more independent variables. This has been the major disadvantage of the procedure. To address this problem and to investigate further the relationship between independent variables and dependent variables, moderated regressions may also be preformed. The weighted linear combinations of the dependent variables, which are statistically significant in canonical correlation, may be used to create dependent variable dimensions. These dimensions could then be assessed in a hierarchical fashion within a regression model.

The appropriate statistical technique for evaluating linear, quadratic, and interactive trends in the data is the moderated regression. Moderated regression will therefore be used to test the current model. The demographic and dispositional variables that included age, gender, education, tenure, and positive and negative affectivity were controlled on Step 1 of the analysis before the introduction of the main predictors -- demands, job control, supervisor and co-worker support, surface and deep acting -- on Step 2. On Step 3 the non-linear components of these variables were introduced and evaluated, followed on Step 4 by the analysis by the interactive components, which assessed the moderating influence of surface and deep acting on the relationship between the set of independent variables (i.e., demands, job control, supervisor and co-worker support) and the set of dependent variables (i.e., positive mood, psychological distress, hostility, job satisfaction, affective wellbeing).

The decision to model the non-linear effects before testing for the interactive effects protects against the possibility that a statistically significant higher order component (i.e., in this instance the interactive effect) is due to a statistically significant lower order component that had not been controlled. In other words, the researcher, if he or she does not control for non-linear effects, would not know whether a statistically significant interaction was due to a “real” or spurious effect (Lubinski & Humphreys, 1990).

To avoid problems of multicollinearity, a consequence of some of the variables being components of the quadratic and interaction terms, these variables were centered (R. C. MacCallum & Marr, 1995) before being multiplied together to produce the quadratic and interaction terms. In other words, the original variables were transformed into standard scores prior to the analyses in order to avoid high inter-correlations between product terms and their component variables which might otherwise produce inflated standard errors, misleading magnitude of coefficients and their signs, and wrong intercepts.

In conclusion, to investigate the relationship between work features and wellbeing, the combination of canonical correlation analysis and moderated regression was applied in this study.

Results

Before moving on to the second phase of the study, descriptive statistics were generated to describe the sample. Table 5.1 shows the means, standard deviations and percentages for low, moderate, and high responses for all study variables. To define the class interval, the researcher used the following equation to calculate the size of each interval (Keller, 2005, p. 38);

Class width = (Maximum score – Minimum score) / number of classes

The results show that only 14.5% of participants reported high job demands, 17.1% reported low job control, while 17.4% and 11.9% reported low supervisor support and peer support, respectively. Overall, a high percentage of participants exerted low to medium levels of emotional labour (80.2% for surface acting, and 96.8% for deep acting). These results suggest that most Thai metropolitan police officers had to endure low to moderate levels of work stressors, and exercised low to moderate levels of emotional labour.

Fifty percent (50.2 %) of the participant expressed high levels of job satisfaction, whereas only 8.1% expressed dissatisfaction. Most participants reported moderate levels of affective wellbeing (63.1%), high levels of positive mood (57.3%), low levels of psychological depression (58.4%), and low levels of hostility (76.3%). These results indicate that most Thai police officers in the metropolitan area had moderate to high levels of psychological health and wellbeing.

Table 5.1

Means and Standard Deviations of all Study Variables

Variables	*N*	Means (*SD*)	Percentage (%)		
			Low	Moderate	High
Independent Variables					
Positive Affectivity	815	3.85 (.70)	1.6	35.8	62.2
Negative Affectivity	815	2.48 (.83)	38.7	56.5	4.8
Job Demands	812	2.94 (.75)	18.5	67.0	14.5
Job Control	811	4.50 (1.31)	17.1	50.2	32.7
Supervisor Support	809	4.45 (1.44)	17.4	47.2	35.4
Co-worker Support	809	4.71 (1.27)	11.9	52.3	35.8
Surface Acting	813	3.06 (.84)	21.9	58.3	19.8
Deep Acting	813	2.92 (.87)	34.2	62.6	3.2
Dependent Variables					
Job Satisfaction	811	5.10 (1.30)	8.1	41.7	50.2
Affective Wellbeing	802	3.80 (.89)	10.6	63.1	26.3
Psychological Distress	803	2.48 (.99)	58.4	39.2	2.4
Hostility	809	2.02 (.96)	76.3	22.2	1.5
Positive Mood	806	3.74 (.78)	3.7	39.0	57.3

Table 5.2

Pearson Inter-Correlation among All Study Variables (N=816)

Variable	*Mean*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age	38.73	8.09	--	-	-.23**	.92**	.14**	-.09**	-.05	.02	.03	-.06	-.07*	-.03	.06	-.10**	.16**	-.039	.10**
2. Gender	-	-		--	-.13**	.17**	.10**	.03	.12**	-.04	-.03	-.04	.09*	.12**	.01	.04	.01	-.04	.04
3. Education	2.34	1.01			--	-.21**	-.10**	.07*	.06	.05	-.03	.04	.03	-.03	-.05	.05	-.07	-.02	-.01
4. Tenure	16.09	8.85				--	.11**	-.06	-.04	.03	.05	-.06	-.07*	-.03	.07	-.10**	.14**	-.06	.11**
5. Positive Affectivity	3.84	.69					*.92*	-.26**	.07*	.12**	.13**	.12**	.04	-.01	.21**	-.36**	.70**	-.22**	.23**
6. Negative Affectivity	2.48	.83						*.84*	.30**	.02	.03	-.02	.24**	.22**	.10**	.35**	-.32**	.23**	.04
7. Job Demands	2.94	1.29							*.82*	-.16**	-.14**	-.15**	.46**	.39**	-.11**	.30**	-.02	.35**	-.06
8. Job Control	4.49	.84								*.89*	.33**	.30**	-.08*	-.04	.35**	-.11**	.17**	-.14**	.26**
9. Supervisor Support	4.45	.87									*.94*	.60**	-.15**	-.03	.35**	-.19**	.16**	-.18**	.13**
10. Co-worker Support	4.71	1.31										*.92*	-.14**	-.05	.35**	-.21**	.12**	-.16**	.13**
11. Surface Acting	3.06	.75											*.82*	.57**	-.02	.23**	.01	.28**	-.002
12. Deep Acting	2.92	1.43												*.86*	-.06	.27**	-.03	.31**	-.10**
13. Job Satisfaction	5.09	1.27													*.96*	-.22**	.27**	-.27**	.40**
14. Hostility	2.02	.96														*.94*	-.37**	.59**	-.07
15. Positive Mood	3.74	.78															*.95*	-.22**	.30**
16. Psychological Distress	2.48	.99																*.85*	-.13**
17. Affective Wellbeing	3.17	.94																	*.87*

Note: ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed). Coefficients in the diagonal are alpha reliabilities.

Table 5.2 shows Pearson correlations among all study variables. Of particular interest in this table is the association between the wellbeing variables and the emotional labour variables. Specifically, surface acting and deep acting are weakly correlated with negative affectivity $r = .24$, $p < .01$ and $r = .22$, $p < .01$, respectively, although no statistically significant associations were detected with the "state" emotional labour variables and dispositional positive affectivity. Contrary to the meta-analytic results in Chapter 2, that surface acting and job satisfaction were negatively and significantly related, the present study did not show any such association either with surface acting or deep acting. Comparable associations between the two emotional labour variables and negative psychological outcomes were found. The associations between hostility and surface and deep acting were statistically significant ($r = .23$, $p < .001$ and $r = .27$, $p < .001$, respectively), as were the associations with psychological distress ($r = .28$, $p < .001$ and $r = .31$, $p < .001$, respectively). For the association with affective wellbeing and the emotional labour variables only deep acting showed a weak statistically significant relationship ($r = .10$, $p < .001$). The strongest association between the emotional labour variables and job features was with job demands or subjective workload. Job demands were moderately associated with surface acting ($r = .46$, $p < .001$) and deep acting ($r = .39$, $p < .001$).

In order to examine the second hypothesis, a preliminary analysis was conducted to assess the canonical correlations between the set of independent variables (i.e., demographic characteristics, job demands, job control, social support and emotional labour) and the set of dependent variables (i.e., job satisfaction, affective wellbeing, psychological distress, hostility, and positive mood). The results of the canonical correlation analysis are shown in Table 5.3.

Table 5.3

First, Second, and Third Canonical Variates Describing the Association between Work Related Features and Psychological Outcomes (N = 816)

	Variate I	Variate II	Variate III
	Standardized Coefficients	Standardized Coefficients	Standardized Coefficients
DV Set			
Job Satisfaction	.035	.791	.557
Hostility	-.270	-.058	.364
Positive Mood	.812	-.525	.379
Psychological Distress	-.078	-.243	.726
Affective Wellbeing	.051	.258	-.045
Percent Variance	33.99	24.01	20.26 *Total* = 78.26
Redundancy	19.31	5.88	3.97 *Total* = 29.17
IV Set			
Age	-.044	-.230	.461
Gender	-.068	.120	-.154
Tenure	.149	.289	-.353
Education	.021	-.030	-.177
Positive Affectivity	.840	-.127	.193
Negative Affectivity	-.224	.475	.338
Job Demands	-.114	-.350	.417
Job Control	.093	.384	.241
Supervisor Support	.103	.191	.064
Co-worker Support	.038	.361	.100
Surface Acting	.047	.122	.234
Deep Acting	-.081	-.317	.343
Percent Variance	12.38	13.04	14.58 *Total* = 39.996
Redundancy	7.03	3.19	2.86 *Total* = 13.086
Wilks Λ	.24	.57	.75
Canonical Correlation	.75	.50	.44

Table 5.3 shows the first, second, and the third canonical correlations, standardized coefficients, the percentage of variance and redundancies extracted from within its own set of variables, as well as the percentage of variance and redundancies extracted from the opposing set of variables.

The results indicated that only the first three pairs were worth interpreting; that is, Wilk's lambda (Λ) for the first pair was $\Lambda = .24$, the second pair $\Lambda = .57$, and the third pair $\Lambda = .75$, while for all other subsequent pairs Wilk's lambda was > .90. A Wilk's lambda of 1.00 indicates that the test has no power to discriminate between pairs; that is, the lower the Wilk's Lambda the greater the discriminatory power of the test.

The first canonical variate extracted 33.99% of variance from the criterion set and 12.38% of variance from the predictor set. Redundancies for the criterion set accounted for 19.31% of variance in the predictor set, while the predictor set accounted for 7.03% of variance in the criterion set.

The first canonical variate shows a significant and strong relationship between the two sets of variables ($R_{cc} = .75$). The dependent variable set is mainly defined by positive mood (standardized weight = .81). For the independent variable set, for this and the other two canonical variates, more detailed analyses will be shown following the hierarchical regression procedures.

The second canonical variate extracted 24.01% of variance from the criterion set and 13.04% of variance from the predictor set. Redundancies for the criterion set accounted for 5.88% of variance in the predictor set, while the predictor set accounted for 3.19% of variance in the criterion set.

The second canonical variate showed a significant and moderate relationship between the two sets of variables (R_{cc} = .50). The dependent variable set is mainly defined by job satisfaction (standardized weight = .791).

The third canonical variate extracted 20.26% of variance from the criterion set and 14.58% of variance from the predictor set. Redundancies for the criterion set accounted for 3.97% of variance in the predictor set, while the predictor set accounted for 2.86% of variance in the criterion set.

The third canonical variate showed a significant and moderate relationship between the two sets of variables (R_{cc} = .44). The dependent variable set is mainly defined by psychological distress (standardized weight = .73).

Tables 5.4, 5.5, and 5.6 show a moderated regression with the canonical variate scores (i.e., composite variable consisting of five-subscales of psychological outcomes) and independent variables (i.e., demographic characteristics, job features, and emotional labour) based on the first, second, and the third canonical variates (see Table 5.3). Moderated regressions were performed to assess the significance levels of the individual predictors, as well as to investigate any curvilinear relationships and interactions as specified in the hypotheses.

Dependent variables were based on the linear standardized weighted combination of the five subscales of psychological outcomes, following the canonical correlation analysis, while the independent variables were the original variable consisting of job features, demographic and dispositional characteristics, and emotional labour.

Table 5.4 shows the beta coefficients for each variable for the different steps in addition to the percent of unique variance, R, R^2, R^2 change and F-values and associated levels of statistical significance.

Table 5.4

Moderated Regression Analysis with the First Canonical Variate as the DV, & Job Feature, Emotional labour & Demographic Variables as the IVs (N = 766)

Variables	Step 1	Step 2	Step 3	Step 4	
	β	β	β	β	% Sr^2
Age	-.042	-.033	-.025	-.006	.0004
Gender	-.073**	-.051*	-.051*	-.049*	.2209
Education	.013	.016	.012	.018	.0289
Tenure	.128	.112	.107	.084	.0961
Positive Affectivity	.646***	.633***	.626***	.620***	30.5809
Negative Affectivity	-.190***	-.169***	-.178***	-.185***	2.4964
Job Demands		-.086**	-.090**	-.083**	.4489
Job Control		.070**	.093**	.106***	.7056
Supervisor Support		.078*	.051	.058	.1681
Co-worker Support		.029	.072*	.059	.1681
Surface Acting		.035	.039	.037	.0784
Deep Acting		-.061*	-.068*	-.066*	.2601
Job Demands ^{2}			-.091**	-.059	.1764
Job Control^2			.036	.040	.1089
Supervisor Support^2			-.037	-.059	.1936
Co-worker Support^2			.112***	.126***	.8836
Surface Acting^2			.042	.063	.1681
Deep Acting^2			.042	.081*	.3364
Job Demands x Surface Acting				-.005	.0009
Job Demands x Deep Acting				-.096*	.3136
Job Control x Surface Acting				-.056	.1369
Job Control x Deep Acting				.029	.0441
Supervisor Support x Surface Acting				-.032	.0289
Supervisor Support x Deep Acting				-.021	.0169
Co-Worker Support x Surface Acting				.137**	.5476
Co-worker Support x Deep Acting				-.071	.1764
Total % Unique Variance					38.3851
R	.732	.754	.766	.772	
R^2	.535	.568	.586	.596	
ΔR^2	.535	.033	.018	.010	
F Change	145.637***	9.562***	5.518***	2.182*	

Note: *** = $p < .001$; ** = $p < .01$; * = $p < .05$. For the composite DV the largest weights are Enthusiasm (+) 30% of unique variance, and Hostility (-) 2.5% of unique variance.

Table 5.4 shows a moderated regression analysis based on the first canonical variate (which mainly defined by positive mood). On Step 1 of the regression, gender, positive affectivity, and negative affectivity were statistically significant (β = -.073, p < .01, β = .646 p < .001, and β = -.190, p < .001, respectively) and the Step 1 variables combined explained 53.5% of the variance in the first canonical variate ($\Delta F_{6,\ 759}$ = 145.637, p < .001). The linear components of the work variables (job demands, job control and social support) and emotional labour variables (surface acting and deep acting) were entered the analysis on Step 2. Job demands, job control, supervisor support and deep acting were all statistically significant (β = -.086, p < .01, β = .07, p < .01, β = .078, p < .05, and β = -.061, p < .05, respectively) and the Step 2 variables combined explained an additional 3.3% of the variance ($\Delta F_{6,\ 753}$ = 9.562, p < .001).

On Step 3, the quadratic terms were statistically significant for job demands (β = -.091 p < .01) and co-worker support (β = .112 p < .001). This step accounted for 1.8% of additional variance ($\Delta F_{6,\ 747}$ = 5.518, p < .001). On Step 4, the 'job demands x deep acting' interaction term was statistically significant (β = -.096 p < .05). Also, the 'co-worker support x surface acting' interaction term was statistically significant (β = .137 p < .01). According to Aiken and West (1991), the presence of a moderating effect is evident when an interaction term is statistically significant. The fourth step of the equation explained 1.0% of additional variance ($\Delta F_{8,\ 739}$ = 2.182, p < .05).

The results from all steps of the equation indicate that positive affectivity and negative affectivity uniquely accounted for 30.58% and 2.50% of the variance. Collectively, these variables accounted for 33.08% of unique variance, while the other variables only accounted for a total of 5.31% unique variance. Positive affectivity was the most important variable in this set.

To plot the interaction effects, shown in Figures 5.1 and 5.2, the procedures recommended by Aiken and West (1991) were followed, by using standardized values for the IV and the moderator. However, because the DV (the canonical variate) was also standardized, with values ranging from negative to positive, a transformation of the canonical variate's scores was performed (i.e., to transform the negative values into positive). For this purpose, and in order to give the composite variable a more intuitive meaning, McCall's T (Kaplan & Saccuzzo, 2001) was used for the transformation (i.e., $T = 10Z + 50$).

The results show a negative relationship between job demands and wellbeing that varies as a function of deep acting. As job demands increase, well-being decreases – but the decrease is more pronounced for those experiencing high levels of deep acting.

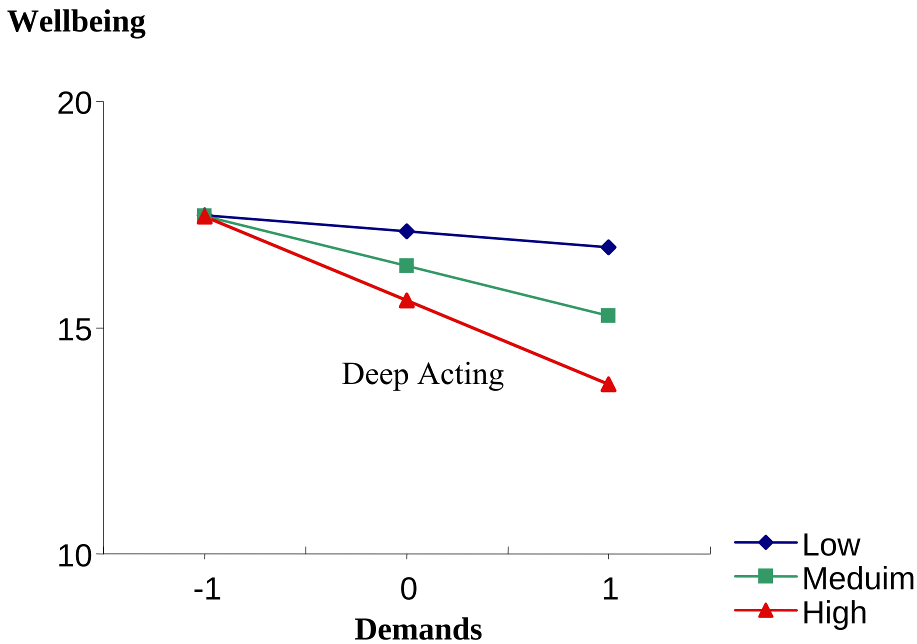

Figure 5.1. The effects of deep acting on the relationship between job demands and wellbeing.

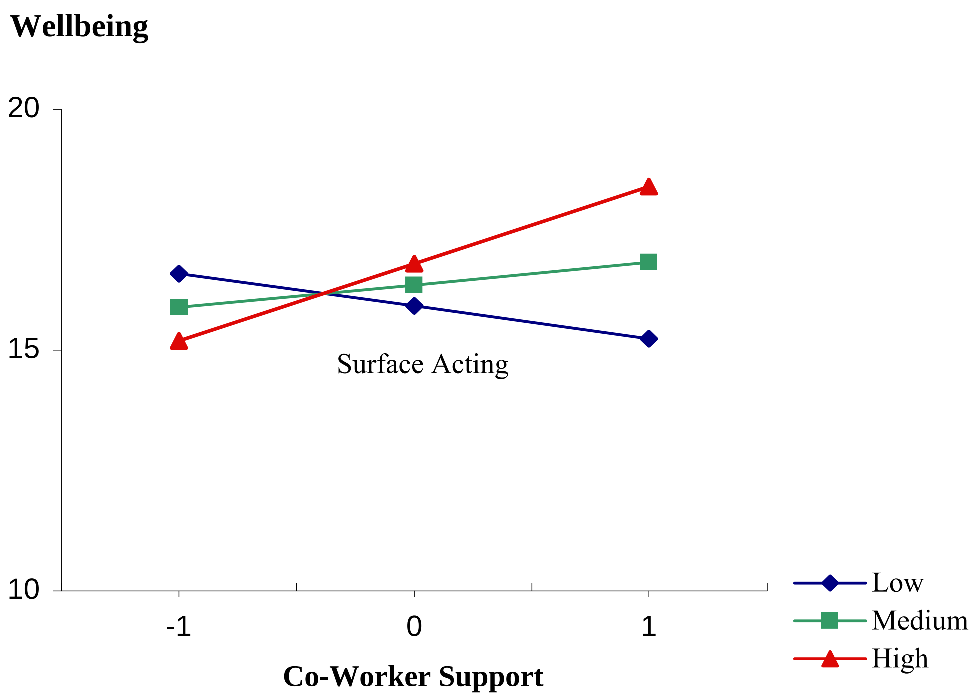

Figure 5.2. The effects of surface acting on the relationship between co-worker support and wellbeing.

Figure 5.2 shows the interaction between peer or co-worker support and surface acting in predicting wellbeing. For individual experiencing high to moderate levels of surface acting, wellbeing increases as the degree of co-worker support increases. In contrast, individuals experiencing relatively low levels of surface acting show a decrease in wellbeing as the degree of co-worker support increases.

Table 5.5

Moderated Regression Analysis with the Second Canonical Variate as the DV, & Job Feature, Emotional labour & Demographic Variables as the IVs (N = 766)

Variables	Step 1	Step 2	Step 3	Step 4	
	β	β	β	β	% Sr^2
Age	-.135	-.114	-.126	-.120	.2025
Gender	.008	.059	.054	.053	.2500
Education	-.013	-.015	-.020	-.018	.0289
Tenure	.172	.143	.137	.130	.2304
Positive Affectivity	-.023	-.062	-.090**	-.097**	.7396
Negative Affectivity	.180***	.235***	.211***	.210***	3.2400
Job Demands		-.173***	-.167***	-.174***	1.9881
Job Control		.190***	.282***	.276***	4.7961
Supervisor Support		.095*	.113**	.112*	.6084
Co-worker Support		.179***	.165***	.163***	1.2769
Surface Acting		.060	.046	.057	.1849
Deep Acting		-.157***	-.146***	-.165***	1.6384
Job Demands ^{2}			.020	.059	.1764
Job Control^2			.225***	.234***	3.6481
Supervisor Support^2			.003	-.003	.0004
Co-worker Support^2			.012	.013	.0100
Surface Acting^2			-.030	-.023	.0225
Deep Acting^2			.142***	.186***	1.7689
Job Demands x Surface Acting				-.004	.0004
Job Demands x Deep Acting				-.092	.2916
Job Control x Surface Acting				-.004	.0009
Job Control x Deep Acting				.076	.2916
Supervisor Support x Surface Acting				.014	.0064
Supervisor Support x Deep Acting				-.014	.0081
Co-Worker Support x Surface Acting				-.051	.0729
Co-worker Support x Deep Acting				.043	.0676
Total % Unique Variance					<u>21.55</u>
R	.202	.495	.559	.572	
R^2	.041	.245	.312	.327	
ΔR^2	.041	.204	.067	.014	
F Change	5.395***	33.919***	12.208***	1.988*	

Note: *** = $p < .001$; ** = $p < .01$; * = $p < .05$. For the composite DV the largest weights are Job Satisfaction (+) 11.8% of unique variance, Affective Wellbeing (+) 1.3% of unique variance, and Depression (-) 0.9% of unique variance.

Table 5.5 shows a moderated regression analysis based on the second canonical variate (which mainly defined by job satisfaction). On Step 1 of the regression, only negative affectivity was statistically significant ($\beta = .180$, $p < .01$) and the Step 1 variables combined explained 4.1% of variance ($\Delta F_{6,\,759} = 5.395$, $p < .001$). The linear components of the job feature variables (job demands, job control, and social support) and the emotional labour variables (surface acting and deep acting) entered the analysis on Step 2. Job demands, job control, supervisor support, co-worker support, and deep acting were all statistically significant ($\beta = -.173$, $p < .001$, $\beta = .190$, $p < .001$, $\beta = .095$, $p < .05$, $\beta = .179$, $p < .001$ and $\beta = -.157$, $p < .001$, respectively) and the Step 2 variables combined explained an additional 20.4% of the variance ($\Delta F_{6,\,753} = 33.919$, $p < .001$).

On Step 3, the quadratic terms were statistically significant for job control ($\beta = .225$, $p < .001$) and deep acting ($\beta = .142$, $p < .001$). Together, the Step 3 variables explained 6.7% of additional variance ($\Delta F_{6,\,747} = 12.208$, $p < .001$). The interactive terms on Step 4 did not show any statistically significant results. In combination, the Step 4 interaction terms explained an additional 1.4% of the variance ($\Delta \mathrm{F}_{8,\,739} = 1.988$, $p < .05$); however, on their own, none of the interaction terms were significant.

The results from the fourth step indicate that negative affectivity (3.24%), job demands (1.99%), job control (4.80%), co-worker support (1.28%), deep acting (1.64%) and the quadratic terms of job control (3.65) and deep acting (1.77%) explained 1 percent or more of unique variance each. Collectively, these variables contributed 18.37% of unique variance, while the other variables only accounted for an additional 3.18% of unique variance. Job control was the most important variable in this set.

Table 5.6

Moderated Regression Analysis with the Third Canonical Variate as the DV, and Job Features, Emotional labour & Demographic Variables as the IVs (N = 766)

Variables	Step 1	Step 2	Step 3	Step 4	
	β	β	β	β	% Sr^2
Age	.182*	.204*	.195*	.176*	.4225
Gender	-.032	-.068*	-.062	-.061	.3364
Education	-.057	-.078*	-.071*	-.076*	.5041
Tenure	-.153	-.156	-.151	-.128	.2304
Positive Affectivity	.158***	.085*	.085*	.079*	.5041
Negative Affectivity	.283***	.150***	.154***	.147***	1.5876
Job Demands		.185***	.193***	.191***	2.4025
Job Control		.107**	.076	.068	.2916
Supervisor Support		.028	.012	.004	.0009
Co-worker Support		.044	.061	.070	.2304
Surface Acting		.104*	.110*	.114**	.7225
Deep Acting		.152*	.157***	.150***	1.3456
Job Demands ^{2}			.066	.037	.0676
Job Control^2			-.044	-.043	.1225
Supervisor Support^2			-.051	-.034	.0625
Co-worker Support^2			-.005	-.014	.0100
Surface Acting^2			-.024	-.038	.0625
Deep Acting^2			.039	.004	.0009
Job Demands x Surface Acting				-.034	.0289
Job Demands x Deep Acting				.130*	.5929
Job Control x Surface Acting				.047	.0961
Job Control x Deep Acting				.059	.1764
Supervisor Support x Surface Acting				.004	.0004
Supervisor Support x Deep Acting				.007	.0025
Co-Worker Support x Surface Acting				-.088	.2209
Co-worker Support x Deep Acting				.008	.0025
Total % Unique Variance					10.025
R	.291	.443	.452	.467	
R^2	.085	.196	.204	.218	
ΔR^2	.085	.111	.008	.014	
F Change	11.716***	17.391***	1.232	1.630	

Note: *** = $p < .001$; ** = $p < .01$; * = $p < .05$. For the composite DV the largest weights are Depression (+) 6.5% of unique variance, Job Satisfaction (+) 4.7% of unique variance, Enthusiasm (+) 2.2% of unique variance, and Hostility (+) 1.5% of unique variance.

Table 5.6 shows a moderated regression analysis based on the third canonical variate (which mainly defined by psychological distress). On Step 1 of the regression, age, positive affectivity, and negative affectivity were statistically significant ($\beta = .182$, $p < .05$, $\beta = .158$, $p < .001$, $\beta = .283$, $p < .001$, respectively). Together, the step 1 variables explained 8.5% of the variance ($\Delta F_{6, 759} = 11.716$, $p < .001$). The linear components of the job feature variables (job demands, job control, and social support) and emotional labour variables (surface acting and deep acting) were on Step 2. Job demands, job control, surface acting, and deep acting were all statistically significant ($\beta = .185$, $p < .001$, $\beta = .107$, $p < .01$, $\beta = .104$, $p < .05$, and $\beta = .152$, $p < .001$, respectively). Together, the Step 2 variables accounted for an additional 11.1% of the variance ($\Delta F_{6, 753} = 17.391$, $p < .001$).

The step 3 quadratic terms did not explain any additional variance – either separately or in combination ($\Delta F_{6, 747} = 1.232$, p > .05). Although the combined Step 4 interaction terms did not explain any additional variance ($\Delta F_{8, 739} = 1.630$, $p > .05$), the interaction between job demands and deep acting was statistically significant ($\beta = .130$, $p < .05$). In order to gain a better understanding of this interaction, it is plotted in Figure 5.3. The plot shows a positive relationship between job demands and psychological distress that varies as a function of deep acting. As job demands increase, psychological distress increases – the increase is more pronounced for those experiencing high level of deep acting.

The results from the forth step indicate that negative affectivity (1.59%), job demands (2.40%), and surface acting (1.35%) contributed 1 percent or more of unique variance. Collectively, these variables contributed 5.15% of unique variance, while the other variables accounted for an additional 4.88% of unique variance. Job demands variable was the most important in this set.

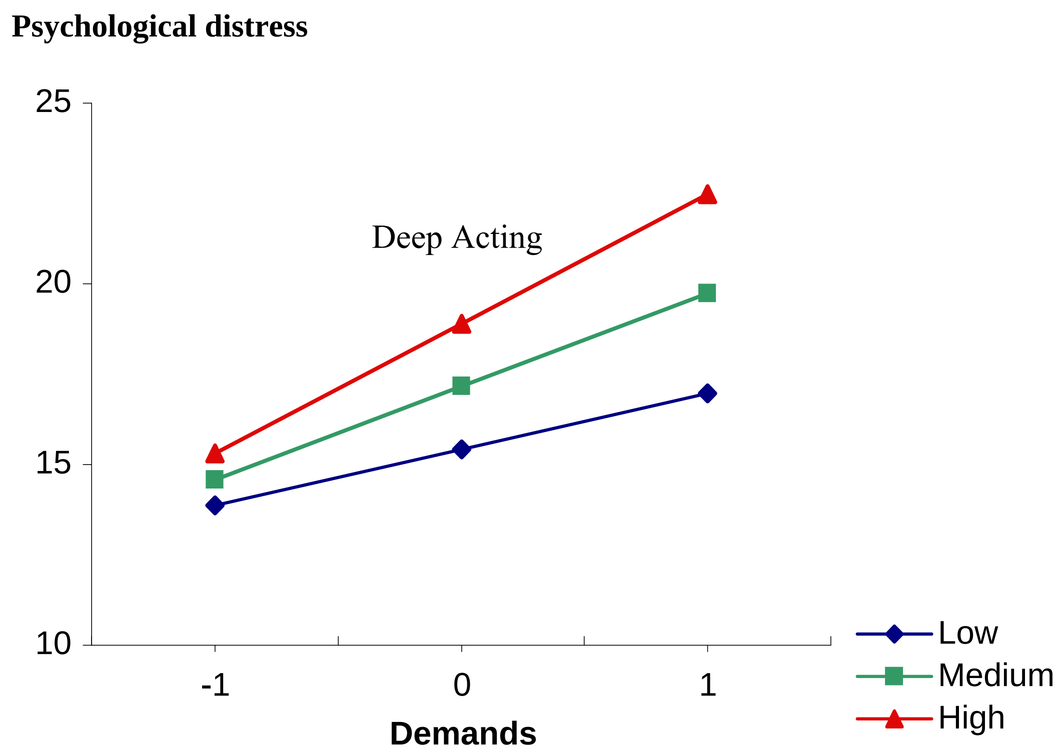

Figure 5.3. The effect of deep acting on the relationship between job demands and psychological distress.

Summary of Results

Results from the three moderated multiple regression analyses indicate that Hypothesis 2.1, which stated that surface acting and deep acting would predict wellbeing/distress (as they are listed on page 86), was partially confirmed. Specifically, the linear components of deep acting were negatively related to wellbeing and job satisfaction, and positively related to psychological distress. No statistically significant results were obtained for the relationship between surface acting and wellbeing. However, surface acting was positively and significantly related to psychological distress.

Hypothesis 2.2 was also partially confirmed. This hypothesis stated that after controlling for the linear components of the regression equation, the quadratic effects would be statistically significant for surface and deep acting in predicting wellbeing/psychological distress (see page 86). The results show that the quadratic components of surface acting were not statistically significant in predicting the three psychological outcomes. However, deep acting showed a statistically significant U-shaped relationship with job satisfaction.

Under the general Hypothesis 2.3 (see page 86), Hypotheses 2.3.1 to 2.3.3 were also partially confirmed. Of the interactions between surface acting and each of the four job features (i.e., job demands, job control, supervisory support and co-worker support) only hypothesis 2.3.3, which argued for a statistically significant interaction between co-worker support and surface acting in predicting wellbeing, was confirmed.

Also, under Hypothesis 2.3 (see page 86), Hypotheses 2.3.4 to 2.3.6 were partially confirmed. Of the interactions between deep acting and each of the four job features (i.e., job demands, job control, supervisory support and co-worker support) only hypothesis 2.3.1, which argued for a statistically significant interaction between job demands and deep acting in predicting wellbeing/psychological distress was confirmed.

Overall, the results indicate that deep acting is negatively related to the emotional wellbeing and job satisfaction of Thai police officers, and that job demands interact with deep acting to affect disproportionately their emotional wellbeing. Although the results of this study seem to be at odds with findings reported in the literature, which suggest that deep acting is positively related to wellbeing, there may be aspect of the police officer's job that require the suppression of stronger and negative emotions (e.g., hostility), when interacting with the public. This may be due to the overwhelming adversarial nature of policing, which may not be present in other helping occupations, where deep acting in the form of empathetic involvement may offer opportunities to the professional for deriving psychic rewards from the positive results of an intervention.

CHAPTER VI

Discussion

The present study examined the validity and cross validity of a seven-dimensional model of wellbeing, and a six-dimensional job features model within the Thai context. Additional aims of the present study were to statistically test a) the linear and curvilinear relationships between a set of critical job characteristics and wellbeing outcomes, and b) the moderating effects of emotional labour on the relationship between job features and employee wellbeing. The following sections will discuss the general aims of the study in more detail.

Multi-dimensional Models

The six-dimensional model of job features and the seven-dimensional model of wellbeing were developed by integrating three main frameworks introduced by previous theorists: the Job demand-Control-Support Model by Karasek and Theorell (1990), the Emotional Labour Model by Grandey (2000), and the Vitamin Model by Warr (1987). Twenty-two items, sourced from English language peer-reviewed psychology journals, served as indicators for a six-dimensional measurement model for job features. The six dimensions were workload or job demands (5 items), job control (3 items), supervisor support (5 items), peer support (3 items), surface acting (3 items) and deep acting (3 items). In addition, thirty items were also selected from the literature as indicators for the seven-dimensional measurement model of wellbeing. The seven dimensions were positive affectivity (5 items), negative affectivity (5 items), job satisfaction (3 items), hostility (5 items), affective wellbeing (4 items), psychological distress (3 items), and positive mood (5 items). After a thorough process of scale development – involving translation and back-translation, the pilot study, and exploratory factor analyses -- a more robust methodology – involving confirmatory factor analytic procedures (CFA) – was applied to validated and cross-validate the measurement models.

The demonstrated construct validity and the high levels of scale reliability (i.e., internal consistency) confirmed that the measures were psychometrically sound and, therefore, suitable for use within the Thai police sector. These results were encouraging and indicated that even though the original measurements were created within Western cultures, the measurement models, with some minor modifications, still showed high validity within the Thai context, and could be generalized to other Thai police officer samples.

Although the language differences between the Western and Thai cultures presented some initial problems, which required the reconstruction of some items to achieve equivalence of meaning, only a few items were rejected following statistical analyses based on data collected in the pilot study. Apart from the rigorous translating and back-translating process of the individual items, the final measurement models required only a few minor modifications of the original models. This indicated that the observed or manifest variables selected for the study reflected the latent or unobservable constructs, namely job features (i.e., job demands, job control, social support, and emotional labour), and wellbeing (i.e., job satisfaction, affective wellbeing, psychological distress, hostility, and positive mood) regardless of the social or cultural background of the participants.

The multi-dimensional measurement models validated in this study provide a comprehensive conceptual framework for understanding the nature and structure of job features and wellbeing. Also, the validation and cross-validation study demonstrated a systematic approach for the development of robust measuring instruments, which will enable other researcher in Thailand to gain valid and reliable data in future investigations.

Job Features, Emotional Labour and Wellbeing

Unlike the evidence from other published research, which concluded that policing is a highly stressful occupation (Anderson et al., 2002; Haarr & Morash, 1999; Jackson & Maslach, 1982), the results from the present study found that only approximately 20% of police officers experienced high level of stress, while more than 80% of Thai police officers reported high level of job satisfaction and wellbeing. The high levels of job satisfaction and wellbeing of Thai police officers could be a consequence of most Thai police officers enduring only low to moderate levels of work-related stressors. In the present sample, more than 70% of Thai police officers experienced low to moderate levels of workload, moderate to high levels of job control, supervisor support, and peer support. According to Karasek' s model (1979), when employees experience moderate job demands, high job control, and high social support, work becomes challenging which encourages employees to learn and develop new skills. As a result, an employee's motivation level is increased, which is likely to lead to personal achievement, job satisfaction, and psychological wellbeing.

In addition to the influence of job characteristics, the nature of the work that police officers carry out and the Thai culture should be taken into consideration as factors that contribute to Thai police officers' job satisfaction and wellbeing. In Thailand, the police force and the law enforcement agencies represent authority, and policing is generally considered a respectable occupation. Thai police officers have a good status within society and are perceived as community 'heroes'. Also, due to fluctuations in the national economy the police force, which is a government agency, is considered a stable organisation, and provides employees with job security and considerable opportunities for career growth. As a consequence, Thai police officers might feel that in spite of poor work conditions, because of low salaries and the nature work that they have to do, they receive adequate levels of job security, recognition from the public, career growth, and social support leading to increases in job satisfaction.

In terms of emotional labour, the present study found that Thai police officers experience moderate levels of emotional labour. This result is inconsistent with previous studies that reported high levels of emotional labour by police officers (Karasek & Theorell, 1990; Zapf, 2002). As mentioned earlier, those previous studies were conducted in Western countries. Therefore, the inconsistency in the results may be due to differences in cultural norms. According to Triandis's theory (1997), differences between Western and Eastern cultures may be explained in terms of attitudinal patterns based on individualist and collectivist values. In individualistic cultures, generally found in Western countries, people are expected to become independent from others and pursue individual goals. People with an individual self -focus tend to express individualistic attributes in public and in private. On the other hand, in collectivist cultures, those commonly found in Eastern countries, people are expected to become interdependent with others and the social context. People with an interdependent self-focus are controlled by the emotions, thoughts, and actions of other people. In collectivist cultures, the social norm is to maintain harmony with others, to meet social obligations, and to support the goal of others who are in a social relationship with oneself (Eid & Ed, 2001).

As a result, when it comes to the experience of emotional labour in the workplace, the cultural patterns mentioned earlier (individualism versus collectivism) seem to influence employees' perceptions of their job requirements. Collectivist cultures generally consider conflict to be a negative response that people should avoid in any situation. Thus, in order to prevent violations of social norms, the control of emotions and overt expressions during social interactions is highly encouraged and naturally accepted. On the other hand, people in individualistic cultures, who believe in the right of individuals to express themselves freely, consider suppressing their real emotions and expressing unfelt emotion as unauthentic and unacceptable. Therefore, in service-oriented organisations, that frequently require employees to suppress their genuine emotions, and express organisationally-desired emotions during service transactions, people in individualistic cultures seem more likely to perceive that they are constantly experiencing high levels of emotional labour, and as a consequence may suffer more from the emotional job requirements.

Multivariate Results

The objective of this part of the study was to assess the linear and non-linear relationship between emotional labour and psychological outcomes (i.e., job satisfaction, affective wellbeing, psychological distress, hostility and positive mood), after controlling for the job features and various demographic variables.

The results showed that job control and social support were positively related to job satisfaction, positive mood and affective wellbeing, and negatively related to psychological distress and hostility. By contrast, job demands were negatively related to job satisfaction and affective wellbeing, but positively related to hostility and psychological distress. Similar to the results from previous research the presence of critical job characteristics, such as job control and social support, are associated with high levels of job satisfaction and affective wellbeing, whereas job demands impact negatively on individuals' heath and wellbeing (Barnett & Brennan, 1995; Boumans & Landeweerd, 1992; Croon et al., 2002; Dollard et al., 2000; Dormann & Kaiser, 2002; Gilbreath, 2004; E. H. Johnson, 1990; Jones & Fletcher, 1996; Karasek, 1979; Karasek & Theorell, 1990; Karasek et al., 1982; Kompier, 2003; Kreitner & Kinicki, 2001; P. Warr, 1996; Yperen & Hagedoorn, 2003). For instance, Gilbreth (2004) suggests that employees working in highly stressful situations (e.g. high job demands, poor working conditions and lack of job autonomy), and who receive high levels of support from their supervisor tend to be more tolerant of unfavourable work situations than employees with little supervisory support. Also, Kreitner and Kinicki (2001) reported that increases in job autonomy levels could reduce the adverse impact of job stressors, such as work overload or unsafe job conditions on employees' physical and emotional heath. Kompier (2003) also suggested that high job demands would have dysfunctional consequences on employees' health, while increasing employee participative decision-making would positively influence job satisfaction and wellbeing outcomes. In terms of emotional labour, the results of the present study showed differential associations with the outcome variables. For example, while psychological distress (i.e., third canonical dimension) was positively associated with both surface and deep acting, job satisfaction (i.e., second canonical dimensions) and positive mood (i.e., first canonical dimension) demonstrated a negative relationship with deep acting only. These findings are supported by previous research and meta-analyses, which indicate that emotional labour (both surface and deep acting) impacts negatively on emotional wellbeing (e.g. Bakker & Heuven, 2006; Brotheridge & Grandey, 2002; Brotheridge & Lee, 2002; Dormann & Kaiser, 2002; Glomb & Tews, 2004; A.A. Grandey, 2003; A.A. Grandey et al., 2005; Karl & Peluchette, 2006; Lewig & Dollard, 2003; Liu et al., 2004).

As was mentioned earlier, canonical correlation analysis focuses only on linear relationships. Therefore, to investigate the curvilinear and interactive effects, it was necessary to perform moderated regression analyses. The results showed that gender, positive affectivity, negative affectivity, job demands, job control, co-worker support, and deep acting had significant linear relationships with the first canonical variate (i.e., positive mood, characterised by feelings of enjoyment and happiness). Collectively, these variables accounted for 34.79% of unique variance. After controlling for the quadratic and interaction terms, co-worker support and deep acting accounted for a significant 1.22% of additional unique variance. The interaction between job demands and deep acting and between co-worker support and surface acting accounted for an additional 0.861% of unique variance.

Positive affectivity, negative affectivity, job demands, job control, supervisory support and deep acting collectively accounted for a significant 14.29% of unique variance in the second canonical dimension (i.e., job satisfaction). The quadratic terms for job control and deep acting were also significant, accounting for an additional 5.41% of the unique variance. Finally, age, education, positive and negative affectivity, job demands, surface acting and deep acting collectively significantly accounted for 7.49% of unique variance in the third dimension (i.e., psychological distress, characterised by feelings of depression, loss of confidence, and low self-worth). Also, the interaction between job control and deep acting accounted for a modest 0.59% of additional unique variance. The unique variance for each variable was generated by calculating the squared semi-partial correlation of these variables and transforming the result into percentages.

Focusing on the effects of emotional labour on psychological outcomes, it was found that even after controlling for demographic variables and job features, the linear relationship between deep acting and psychological outcomes was still significant. Deep acting showed a significant negative relationship with the first canonical dimension (mainly defined by positive mood), and the second canonical dimension (mainly defined by job satisfaction). Deep acting also showed a significant positive relationship with the third canonical dimension, which was mainly defined by psychological distress.

By contrast, surface acting showed a significant positive relationship only with the third canonical dimension (i.e., psychological distress). Consistent with past research (Cote & Morgan, 2002; Hochschild, 1983; Pugliesi, 1999), this finding suggests that work requiring high levels of surface acting predicts negative psychological outcomes.

There was a significant curvilinear relationship between the first canonical dimension (i.e., positive mood, characterised by high arousal/engagement) and co-worker support, which remained significant even after the introduction of the interaction terms.

Also, although deep acting was not statistically significant when its quadratic term entered the analysis, the curvilinear relationship became significant after the introduction of the interaction terms on Step 4 of the analysis. By contrast, the quadratic term for job demands on Step 3 of the analysis was statistically significant, but the curvilinear relationship became non-significant with the introduction of the interaction terms on Step 4 of the analysis. These results suggest differential and more complex relationships between the quadratic and interaction terms associated with the deep acting and job demands variables.

For the second canonical dimension (i.e., job satisfaction/contentment) a significant positive quadratic relationship was found (i.e., U-shaped) for deep acting and job control on Step 3 of the analysis, which remained significant even after the introduction of Step 4 variables.

For the third canonical dimension (i.e., psychological distress/depression) no significant quadratic terms were found. The results examining the linear relationships between wellbeing and emotional labour showed that surface acting is not related either linearly or quadratically to either the first or second canonical dimension (i.e., positive mood and job satisfaction), while for deep acting the linear relationship to the first and second canonical dimension was significant and negative. In addition, there was a positive quadratic relationship (i.e., U-shaped) between deep acting and the second canonical dimension (i.e., job satisfaction). This suggests that job satisfaction would remain high at low levels of deep acting, decline with moderate levels, and increase again at high levels.

Due to limited support for linear relationships between co-worker support and psychological outcomes, only the quadratic relationship will be discussed. The results indicate that positive mood would rapidly increase in a non-linear fashion, if there were also an increase in the level of co-worker support. The growth rate of job satisfaction is linearly associated with low to moderate levels of job control; however it rapidly increases in a non-linear fashion with high levels of job control.

The results showed that the positive quadratic relationship between deep acting and psychological wellbeing is contrary to Warr's Vitamin model. The Vitamin model predicts that when job demands (i.e., emotional job requirements) increase beyond an optimum level for an individual, psychological health will suffer. A possible explanation for this contradictory finding might be based on the process of deep acting, and the management of emotion and expression by adjusting one's original thoughts and perceptions to match those of the situation (Hochschild, 1983). Deep acting, unlike surface acting which relates to faking or suppressing true feelings, focuses on recreating new perceptions or attitudes towards a situation, rendering the following emotions and expressions that follow genuine. Consequently, if service providers adopt high levels of deep acting, in order to display organisationally expected emotions, they might no longer be aware that they are controlling their feelings and this could result in an effortlessness response. This explanation is supported by Csikszentmihalyi's 'Flow Theory' (1990) which proposes that 'flow', characterised by feelings of energized focus, full involvement, and success in the process of the activity, is the mental state of operation in which individuals are fully immersed in what they are doing. Flow could be experienced in any of these following ways: clearly seeing the expectations and rules of the action;

deeply engaging in the activity; a loss of self-consciousness; distorted sense of time; immediately acknowledging feedbacks of the action; a balance between ability level and challenge; a sense of personal control over the situation or activity; action that becomes effortless; and action merging with awareness (Csikszentmihalyi, 1992). Csikszentmihalyi claimed that an individual could experience flow anywhere, at any time, if intrinsic or extrinsic motivation was present.

Previous studies also suggested that deep acting may be motivated by intrinsic rewards such as an increase in personal accomplishment (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2002), an increase of task effectiveness and employees' self-efficacy (Ashforth & Humphrey, 1993; Zapf, 2002), a reduction in depersonalisation (Brotheridge & Lee, 2002), a stability of the organisation-customer relationship, and an increase in customer service performance (Pugh, 2001; Rafaeli & Sutton, 1990; Tsai, 2001; Tsai & Huang, 2002; Zeithaml et al., 1990). For example, Brotheridge and Grandy (2002) argued that deep acting involves treating a customer as someone deserving authentic expression, and when this is delivered the positive feedback from a customer can increase a sense of personal efficacy. Also, deep acting may be performed for extrinsic purposes, such as reducing the negative effects of stressors in the workplace (Brotheridge & Lee, 2002; Gross, 1998b; Richard & Gross, 1999), and improving mood states (Totterdell & Parkinson, 1999). Therefore, the concept of flow seems to be a reasonable explanation for a positive curvilinear relationship (i.e., U-shape) between high levels of deep acting and an increase in psychological wellbeing. However, individual differences may provide an alternative explanation for this result. For instance, individuals who manifest high levels of deep acting tend to have more ability in adjusting their internal cognitions and feelings according to organisationally expected emotions than are individuals who report low or moderate level of deep acting. Consequently, individuals with high levels of deep acting would experience more intrinsic rewards such as a sense of self-efficacy or a sense of self- accomplishment than their counterparts leading to higher levels of psychological wellbeing.

Results from the moderated hierarchical regression analyses show that the interactions between deep acting and job demands, and surface acting and co-worker support were significant predictors of the first canonical dimension (i.e., positive mood, or enthusiasm). Also, the interaction between deep acting and job demands was a significant predictor of the third canonical dimension (i.e., psychological distress or, more precisely, depression). An examination of the interactions between deep acting and job demands indicates that increasing levels of job demands, if matched with high levels of deep acting, lead to a reduction in psychological wellbeing, or conversely in an increase in psychological distress, more so than if the levels of deep acting were low. This result is consistent with previous studies suggesting that service providers, who expend high levels of emotional energy in the pursuit of organisational goals, in this case organisationally required display rules involving emotional expression, are prone to experience adverse health and wellbeing (Lewig & Dollard, 2003; Wharton, 1993). These outcomes are also consistent with several studies suggesting that high levels of emotional labour were associated with increases in emotional dissonance leading to dysfunctional consequences for an individual's wellbeing (Ashforth & Humphrey, 1993; Brotheridge & Grandey, 2002; A.A. Grandey et al., 2005; Hochschild, 1983; Karl & Peluchette, 2006; Mann & Cowburn, 2005; Morris & Feldman, 1996b; Pugliesi, 1999; Wharton, 1993).

The interaction between co-worker support and surface acting showed that higher levels of co-worker support, together with high levels of surface acting, led to an increase in psychological wellbeing more so than if the level of surface acting was low. At first glance this outcome may appear to contradict previous studies which argued that increases in the level of surface acting, as a method of emotional regulation, had a negative impact on individual wellbeing (Brotheridge & Grandey, 2002; Brotheridge & Lee, 2002, 2003; A.A. Grandey, 2003; A.A. Grandey et al., 2005; Montgomery et al., 2006; Totterdell & Holman, 2003; Zammuner & Galli, 2005). However, these inconsistencies may be reconciled if one interprets these results through the conservation of resources (COR) model (Hobfoll, 1989). The COR model argues that people are motivated to maintain and safeguard valued psychological resources, and strive to minimize resource loss if the individual is exposed to excessive role demands. When these resources are depleted and cannot be replenished, the individual suffers emotional strain. One way of re-gaining lost psychological resources is by engaging in the building of social networks. The impact of social support in reducing work related stress has also been investigated by many other researchers (Abraham, 1998; Dollard et al., 2000; Karasek et al., 1982; Kreitner & Kinicki, 2001; Winnubst & Schabracq, 1996; Zapf, 2002). The results from those studies indicate that in addition to increases of an individual's feeling of control and safety, social support often helps to prevent, or even cure stress reactions caused by exposure to high risk work environments, characterised by high physical or emotional job demands. For example, in a study by Abraham (1998), the negative impact of emotional labour on job satisfaction appeared only when social support was low, whereas there was a slight increase in job satisfaction when both emotional labour and social support were high.

In summary, the analyses revealed that emotional labour (i.e., surface and deep acting) had moderating effects on the relationship between certain job features (i.e., job demands, social support) and psychological wellbeing after controlling for the demographic and dispositional variables. Specifically, job demands, co-worker support and emotional labour not only showed linear relationships with psychological wellbeing, but also curvilinear and interactive relationships. However, consistent with Grandey, Fisk, and Steiner's (2005) results, neither surface nor deep acting showed a moderating influence on the relationship between job control and job satisfaction, or more generally wellbeing.

Although there are some inconsistencies between the results of previous studies and the present results, these may indicate that other related factors, such as cross-cultural differences, and differences in sampling method (i.e., occupational selection), may have affected the expected relationships.

Strengths & Limitations of the Study

The major strength of this study were: (i) the care taken for the development of the Thai measurement models based on the existing peer-reviewed published English literature, (ii) the rigorous methodology employed for the translation of the instruments, and (iii) the robust statistical methodologies for the validation and cross-validation of the measures. The combination of both qualitative and quantitative methodologies for the development of measuring instruments in a different language is rarely found in cross-cultural studies.

Another strength of this study was the control of antecedents (i.e., demographic factors and temperament) and job features, which have established relationships with the emotional labour variables and wellbeing. As a result, the present findings provide reliable data on the emotional labour-wellbeing relationships, unconfounded by extraneous variables. Also, the large sample size ($N > 800$) and the analysis of the quadratic and interaction effects provide a more comprehensive picture of emotional labour. In addition, while previous emotional labour studies were mainly conducted on samples drawn from business, hospitality, and health care settings in Western countries, this study focused on a sample from a public sector setting in an Asian country (i.e., police officers in Thailand).

Although the present study has several strengths, it is not free from limitations. The first limitation of the study is that the model was tested only on police officers in Thailand. Assessing the validity of the model across different professions and different cultures can contribute to the generalizability of the model. Therefore, an assessment of the model's validity across different groups of participants is recommended in further research.

Second, data derived from self-report survey instruments could inflate correlations among variables due to common method variance (CMV) (Spector, 2006). According to Campbell and Fiske's recommendation (1959), comparative methods of data collection are required in order to deal with potential biases. As a result, further research should introduce a variety of data gathering strategies for more valid conclusions; for example, a combination of self-report measures and reports derived from additional sources, such as co-workers and supervisors, or a combination of data based on different methods, such as surveys, structured interviews, and researcher observations.

Third, the application of a cross-sectional design for the present study prevents causal inferences being made about the direction of the emotional labour and wellbeing associations. Although, the reported relationships indicate that high emotional labour decreases wellbeing, it is equally likely that the relationships are bidirectional; that is, low levels of wellbeing might also increase emotional labour. Due to the research design, the data of the study were collected only once. Thus, it does not provide sufficient evidence to detect how emotional labour affects wellbeing over a period of time. As a result, longitudinal research is required in future studies to identify the causal mechanisms affecting these two clusters of variables.

Theoretical Implication

The present study integrated a number of existing models to describe the effects of emotional labour on the relationship between job features and wellbeing within the Thai context. Models introduced in this study included: a six dimensional model of job features (i.e., job demands, job control, supervisor support and co-worker support), and emotional labour (i.e., surface acting and deep acting); and a seven dimensional model of wellbeing (i.e., negative and positive affectivity, job satisfaction, affective wellbeing, psychological distress, hostility and positive mood).

After the psychometric properties of the measurement models were assessed, the results of this study confirmed the functionality and use of a Thai instrument adapted from the original English version. It is hoped that the adapted scales will make a contribution towards future research in Thailand, especially in other public sector settings. Use of these instruments will also advance the quantitative investigation of the effects of emotional labour on police officers' health and wellbeing in Thailand.

Results from the present study need to be interpreted with caution, however, because some of the conclusions reached may be influenced by culture-specific phenomena. Thus, a cross-cultural study, as for example, comparing police officers from Thailand with those in Western countries, is warranted in future studies.

Applied implications

The findings from the present study have some practical implications for both police officers and their organisation. For instance, police officers, whose work is carried out for the most part under stressful conditions, characterised by high job demands, low job control, and low social supports, may also experience high levels of emotional labour, and are more likely to experience problems with their general health and psychological wellbeing. The present findings point to the necessity of promoting the wellbeing of police officers, by implementing strategies that have the potential to reduce work stressors, by giving police officers more opportunities for controlling their work and making their own decision, while encouraging them to seek support from their supervisor and peers when they encounter difficulties. An organisation-wide intervention is also called for with regard to work redesign, time and self-management, and, more importantly, workload management.

The results of the study showed the negative linear effects of emotional labour on police officers' job satisfaction and wellbeing. Specifically, deep acting (which exists when there is congruence between genuine felt feelings and displayed emotions) showed increases in psychological distress and decreases in positive mood and job satisfaction. Surface acting on the other hand, which involves the suppression of felt emotions through faking, was associated only with increases in psychological distress.

While the association between surface acting and wellbeing is consistent with the literature, the association between deep acting and wellbeing is not. The argument has been made that surface acting is more detrimental to wellbeing, because it represents a greater investment in resources due to the physiological effort required to inhibit one's "true" emotions (Brotheridge & Lee, 2002), leading to inauthenticity. By contrast, deep acting is characterised by feelings of authenticity and the physiological requirements are not as great. However, when considering these results one needs to reflect on the requirements of policing, and the exposure of workers to unpleasant situations involving aggression, and obligatory involvement with victims of crime that forms an integral part of police work and are impossible to avoid. Under these circumstances, it is not always possible for authentic expression (i.e., deep acting) to result in feelings of personal accomplishment and psychological rewards (i.e., it is often seen as a "thankless" job). As a consequence, an imbalance between the emotional effort required to carry out the tasks and the rewards accruing to the individual would lead to increases in emotional strain consistent with the COR theoretical framework.

It seems appropriate for management to consider ways to reduce the impact of emotional labour. Political and ethical issues regarding the control of employee emotions by organisation should also be taken into consideration when job requirements are established. Increasingly organisations are exerting pressure on employees to maintain required emotions towards the public and others in the workplace. According to Schaubroeck and Jones's (2000) recommendations, employees who are bound in high service-oriented environments would benefit from training programs that focus on emotion management. With an appropriate training program, employees are encouraged to manage their emotions in healthy ways. As a result, it is likely that their emotional displays will be more authentic, and by improving the quality of interpersonal relationships the overall wellness of the work environment will be enhanced. In addition to self-emotional management training, training that generally focuses on teaching employees skills to regulate the emotions of recipients should also be introduced. For example, police officers should be instructed how to reduce aggressive behaviours and calm victims of crime. Although it seems that the training aims to regulate recipients' emotions, it also has (indirectly) positive consequences for the employees involved. For instance, it could smooth difficult social interactions causing a less stressful working environment. More importantly, however, scheduled debriefing sessions with police officers exposed to traumatic events, as a result of their work, needs to be established to protect them from burnout.

In addition to providing training, organisations should understand that emotional labour is part of the employees' work and needs to be compensated. The organisational rules regarding the emotional display of service providers and the style of supervision may need revision. Allowing employees to express their true emotions in an appropriate way is not only a benefit for the employees but also a long-term benefit for both clients and organisations.

Finally, in spite of the limitation of the present study, the findings have implications for multicultural organisations regarding the development and implementation of human resource policies that are sensitive to cultural differences associated with emotional regulation in the workplace.

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Appendices

Appendix I

The Questionnaire

METROPOLITAN POLICE DEPARTMENT
THAILAND

EMPLOYEE OPINION
SURVEY

2005

STRICTLY CONFIDENTIAL

Dear Participant

This questionnaire is an Employee Opinion Survey of Metropolitan Police Department (Thailand) which is part of a research project being carried out by Miss Leartluk Nuntavisit, PhD student of the School of Psychology at Curtin University (Perth; Australia).

The questionnaire provides an opportunity for you to describe the work that you do, and how you feel about it. This information will be invaluable in evaluating the attitudes of metropolitan police officers of Thailand, in identifying opportunities for improvement and in assessing the overall effectiveness of the organization. A report summarizing the findings will be supplied to the metropolitan police department.

Your participation in the survey is voluntary. Your non-participation or withdrawal from the study may be done at any time, which will not affect your rights in any way. However, your participation will be greatly appreciated.

On the following pages you will find several kinds of questions about yourself and your job. There are no trick questions. If some questions appear repetitive, this is to ensure that we have adequately obtained your viewpoint. This questionnaire requires approximately 20-30 minutes to complete.

In addition to the question describing yourself and your feelings toward your job, we have asked for some personal details. This allows us to explore whether factors such as an employee's age, tenure, or education are associated with variables such as work stress. These questions and others like them will help in the development of appropriate human resources policies within the metropolitan police department.

Confidentiality

We can assure you that your individual responses will not be reported, and that the data entry and analysis for the project is being conducted independently of your organisation. No one from metropolitan police department will have access to completed questionnaires. The reporting of all results will be at the group level and will not identify individual responses. Your organisation has agreed that completed questionnaires belong to Curtin University and that they will remain totally confidential.

Any Question?

If, at anytime, you have any queries or concerns, please contact Leartluk Nuntavisit at 02-9823803 or leartluk@hotmail.com. Please note that by completing this questionnaire you indicate that you have understood what the research involves, and have consented to participate in it.

Returning Your Questionnaire

You have been provided with a sealable envelope in which to place your completed survey. Your survey will be collected immediately after you have completed it and returned to the researcher.

Thank you for you participation

Filling in The questionnaire

There are several sections to the questionnaire.
Please:

- Read the instructions at the start of each section carefully before answering.
- Look carefully at the response alternatives for each section as different response formats exist (e.g. 'To no extent', 'Strongly agree').
- Tick (√) in the best response for each question.
- Please **answer all questions**, even if you are not completely sure of an answer.
- Please answer each question honestly.
- Don't spend too much time on one question. Your first response is usually the best.

*** BEGIN HERE***

Background Questions

The following questions are very important for properly coding and analyzing the data. As indicated earlier, **all responses will be kept strictly confidential to the principal researcher at Curtin University.**

Please tick (√) in the appropriate box.

1. How old are you? _____ years ______ months

2. Gender ☐ Male ☐ Female

2. What is the highest qualification you have obtained?

☐ High school ☐ Certificate or Diploma

☐ Bachelor ☐ Master or higher

☐ Other (please specific) __________

3. How long have you been working in the police force?_____ years

4. What is your job category? (Choose one)

- ☐ Traffic police officer
- ☐ Detective police officer
- ☐ Administrative police officer
- ☐ Patrol police officer
- ☐ Other (please specific) ___________

How do you normally feel?

The following words describe some additional feelings and emotions.
Please tick (√) the box which best shows how you feel in general. How do you normally feel on an average day?

	Not at all	A little	Moderately	Quite a bit	Extremely
Strong					
Guilty					
Enthusiastic					
Irritable					
Ashamed					
Nervous					
Determined					
Attentive					
Active					
Afraid					

Your workload

The following five questions deal with the amount of workload in your job.
Please tick (√) in the appropriate box.

While working, on an average day at work, to what extent do you find yourself:

Workload	To no extent	Little extent	Some extent	Great extent	Very great extent
1. Seeking relief from demanding work?					
2. Under constant pressure to do work on time?					
3. Having work piling up faster than you can complete it?					
4. Having to work faster than you would like?					
5. Being pushed by deadlines?					

Your work condition

The following three questions ask you to describe your work condition, as objectively as you can.
Please tick (√) in the appropriate box.

Physical threats	To no extent	Little extent	Some extent	Great extent	Very great extent
1. To what extent is your health put at risk by using equipments related to your job (car, motorcycle, machine, etc.)?					
2. To what extent is your life put in danger by the violent acts of people?					
3. To what extent is your health put at risk as a result of work conditions (air pollution, dangerous chemicals or animal, fire, etc.)?					

What do you think about your job?

Listed below are a number of statements, which could be used to describe a job. Please indicate whether each statement is an **accurate** or an **inaccurate** description of your job.

For each statement, please tick (√) in the appropriate box to indicate how accurate this statement in describing your job.

Very inaccurate	Mostly inaccurate	Slightly inaccurate	Uncertain	Slightly accurate	Mostly accurate	Very accurate
1	2	3	4	5	6	7

Job authority	1	2	3	4	5	6	7
1. The job permits me to decide on my own how to go about doing work?							
2. The job gives me considerable opportunity for independence and freedom in how I do the work.							
3. The job gives me a chance to use my personal initiative and judgment in carrying out the work.							

Support from your supervisor and coworker

The following set of questions deals with the level of support you receive from your supervisor and coworkers.

Please tick (√) in the appropriate box to indicate how much you agree or disagree with each statement.

Strongly disagree	Disagree quite a lot	Disagree just a little	Not sure	Agree just a little	Agree quite a lot	Strongly agree
1	2	3	4	5	6	7

Supervisor and coworker support	1	2	3	4	5	6	7
1. My supervisor is interested in me getting ahead in the organization.							
2. My supervisor is easy to talk to about job-related problems.							
3. My supervisor is behind me 100%							
4. My supervisor backs me up and lets me learn from my mistakes.							
5. I can count on my supervisor to help me when I need it.							
6. If I face difficulties at work I know my coworkers would try and help me out.							
7. I can trust the people I work with to lend me a hand if I need it.							
8. Most of my coworkers can be relied upon to do as they say they will do.							

What do you feel about your job?

The following six questions deal with your feelings about your job.
Please tick (√) in the appropriate box.

Emotional labor	To no extent	Little extent	Some extent	Great extent	Very great extent
1. To what extent does your job require you to resist expressing your true feelings?					
2. To what extent does your job require you to pretend to have emotions that you don't really have?					
3. To what extent does your job require you to hide your true feelings about a situation?					
4. To what extent do you make an effort to actually feel the emotions that you need to display to others?					
5. To what extent do you try to actually experience the emotions that you must show?					
6. To what extent do you really try to feel the emotions you have to show as part of your job?					

How satisfied are you with your job?

The following three questions deal with your satisfaction from your job.
Please tick (√) in the appropriate box.

Strongly disagree	Disagree quite a lot	Disagree just a little	Not sure	Agree just a little	Agree quite a lot	Strongly agree
1	2	3	4	5	6	7

	1	2	3	4	5	6	7
1. Generally speaking, I am very satisfied with this job.							
2. I think this job satisfies me.							
3. I am generally satisfied with the kind of work I do in this job.							

How often have you experience these feeling recently?

The following statements describe your affective well-being over the past few weeks. **Please answer ALL the questions on the following pages simply by a tick (√) in the box, which you think most nearly applies to you.** Remember that we want to know about present and recent complaints, not those you had in the past. It is important that you try to answer **all** the questions.

Have you recently:	Not at all	Occasionally	Some of the time	Much of the time	Most of the time	All of the time
1. been able to concentrate on whatever you are doing?						
2. felt that you are playing a useful part in things?						
3. felt capable of making decisions about things?						
4. been able to enjoy your normal day-to-day activities?						
5. been able to face up to your problems?						
6. been feeling reasonably happy, all things considered?						

How often have you had these symptoms recently?

The following statements describe your psychological distress. **Please answer ALL the questions on the following pages simply by a tick (√) in the box, which you think most nearly applies to you.** Remember that we want to know about present and recent complaints, not those you had in the past. It is important that you try to answer **all** the questions.

Have you recently:	Not at all	Occasionally	Some of the time	Much of the time	Most of the time	All of the time
1. lost much sleep over worry?						
2. felt constantly under strain?						
3. felt you could not overcome your difficulties?						
4. been feeling unhappy and depressed?						
5. been losing confidence in yourself?						
6. been thinking of yourself as a worthless person?						

How often have you had these experiences recently?

We should like to know how you feel recently when you are dealing with people. **Please answer ALL the questions on the following pages simply by a tick (√) in the box, which you think most nearly applies to you.** Remember that we want to know about present and recent complaints, not those you had in the past. It is important that you try to answer **all** the questions.

	Never	Occasionally	Some of the time	Much of the time	Most of the time	All of the time
1. Feeling angry towards others for no reason						
2. Losing your temper quickly when dealing with people						
3. Being short-tempered						
4. Threatening others when feeling frustrated						
5. Having conflicts or arguments with others						

How have you been feeling lately?

The following words describe some additional feelings and emotions.
Please tick (√) the box which best shows how you feel in general. How have you been feeling over the last two weeks?

	Not at all	A little	Moderately	Quite a bit	Extremely
Attentive					
Determined					
Active					
Strong					
Enthusiastic					

Returning your questionnaire

Now that you have finished, please go back and check to see that you have answered all the questions. Then place your questionnaire in the envelope and give it to your survey team representative.

Thank you for you participation

สถานีตำรวจนครบาล
แห่งประเทศไทย

แบบสอบถามความคิดเห็น
ของเจ้าหน้าที่ตำรวจ
พ.ศ. 2548

<u>เอกสารเป็นความลับ</u>

เรียน ท่านผู้ตอบแบบสอบถาม

แบบสอบถามฉบับนี้เป็นแบบสอบถามเกี่ยวกับความคิดเห็นของเจ้าหน้าที่ตำรวจนครบาล แห่งประเทศไทย ซึ่งเป็นส่วนหนึ่งของงานวิจัยปริญญานิพนธ์ ของนางสาวเลิศลักษณ์ นันทวิสิทธิ์ ซึ่งกำลังศึกษาอยู่ในระดับปริญญาเอก คณะจิตวิทยา ณ มหาวิทยาลัย Curtin ประเทศออสเตรเลีย

แบบสอบถามฉบับนี้เปิดโอกาสให้ท่านตอบแบบสอบถามได้โดยอิสระ เพื่อบรรยายถึงงาน และความรู้สึกเกี่ยวกับงานที่ท่านทำ ข้อมูลที่ได้มีคุณค่าอย่างมากในการประเมินทรรศนะคติของเจ้าหน้าที่ตำรวจนครบาล แห่งประเทศไทย เพื่อเสาะหาข้อเท็จจริงในองค์กรอันเป็นประโยชน์ในการพัฒนา และประเมินประสิทธิภาพโดยรวมขององค์กร

การตอบแบบสอบถามนี้เป็นไปโดยสมัครใจ ท่านสามารถหยุดการตอบแบบสอบถามนี้ได้ตลอดเวลาโดยไม่มีผลกระทบต่อการทำงานของท่าน ผู้วิจัยมีความซาบซึ้งใจอย่างยิ่งต่อความร่วมมือของท่าน แบบสอบถามนี้ได้รับอนุญาตจาก Human Research Committee แห่งมหาวิทยาลัย Curtin สามารถสอบถามทางจดหมายได้ที่ Office of research and Development, Curtin University of Technology, GPO Box U1987, Perth 6845

ท่านจะพบคำถามต่างๆเกี่ยวกับตัวท่านและงานของท่าน ในบางคำถามอาจพบว่ามีความคล้ายคลึงกันอันเป็นเจตนาของผู้วิจัยที่จะสร้างความแน่ใจว่าได้ครอบคลุมคำถามต่อทุกมุมมองของท่าน

แบบสอบถามฉบับนี้จะใช้เวลาประมาณ 20-30 นาที ในการตอบ ผู้วิจัยจะถามถึงรายละเอียดส่วนบุคคลที่เกี่ยวข้องกับตัวท่าน เช่น อายุ เพศ อายุการทำงาน การศึกษา ฯลฯ ข้อมูลเหล่านี้จะช่วยให้ผู้วิจัยสามารถศึกษาถึงปัจจัยส่วนบุคคลที่มีผลต่อตัวแปรต่างๆ เช่นความเครียดในการทำงาน ความพึงพอใจในงาน เป็นต้น ผลที่ได้จากการวิจัยจะช่วยในการพัฒนานโยบายด้านทรัพยากรบุคคลขององค์กร

ขอเรียนว่า แบบสอบถามของท่าน**จะถูกปิดเป็นความลับ** การป้อนและวิเคราะห์ข้อมูลสำหรับงานวิจัยจะถูกดำเนินการอย่างเป็นอิสระโดยผู้วิจัย
และจะไม่มีบุคคลใดในองค์กรสามารถเข้าถึงแบบสอบถามของท่านได้
ผลการวิจัยจะถูกรายงานโดยรวมในระดับองค์กร
ไม่มีการชี้เฉพาะผลจากบุคคลใดบุคคลหนึ่ง
หากท่านมีข้อสงสัยหรือข้อแนะนำใดๆกรุณาติดต่อนางสาวเลิศลักษณ์ นันทวิสิทธิ์ โทรศัพท์ 02-9823803 หรือ e-mail address: leartluk.nuntavisit@student.curtin.edu.au.

อนึ่ง
เมื่อท่านทำแบบสอบถามเสร็จแล้วกรุณาส่งคืนผู้มีเกียรติที่ประสานงานเรื่องนี้ แบบสอบถามจะถูกเก็บในซองปิดผนึกเพื่อรอการประเมินผลต่อไป

ขอแสดงความนับถือ

(นางสาวเลิศลักษณ์ นันทวิสิทธิ์)
ผู้วิจัยปริญญานิพนธ์

กรุณาตอบคำถามต่อไปนี้โดย:

- อ่านคำแนะนำที่อยู่ข้างต้นของแบบสอบถามในแต่ละส่วนอย่างละเอียดก่อนตอบคำถ
 าม
- ในแบบสอบถามแต่ละส่วนจะมีรูปแบบคำตอบที่แตกต่างกัน กรุณาพิจารณาอย่างรอบคอบก่อนเริ่มตอบคำถาม
- กาเครื่องหมายถูก (√) ลงในช่องว่างที่ตรงกับความคิดของท่านที่สุด ทุกๆคำถามไม่มีคำตอบที่ถูกหรือผิด
- กรุณาตอบทุกคำถาม อย่างตรงไปตรงมา
- กรุณาอย่าใช้เวลานานเกินไปในการตอบคำถาม คำตอบแรกที่ท่านคิดมักเป็นคำตอบที่ดีที่สุด

*** เริ่มที่นี่ ***

ข้อมูลส่วนบุคคล

คำถามต่อไปนี้มีเกี่ยวกับข้อมูลส่วนบุคคลซึ่งมีความสำคัญอย่างมากต่อการแปรผลคะแนน และการวิเคราะห์ข้อมูล

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

1. กรุณากรอกอายุของท่าน ________ปี ________เดือน

2. เพศ ☐ ชาย ☐ หญิง

3. ระดับการศึกษาสูงสุดที่ท่านสำเร็จ

☐ มัธยมศึกษาตอนปลาย หรือเทียบเท่า ☐ อนุปริญญา หรือเทียบเท่า

☐ ปริญญาตรี หรือเทียบเท่า ☐ ปริญญาโท หรือสูงกว่า

☐ อื่นๆ (กรุณาระบุ) __________

4. ท่านทำงานในสายงานตำรวจมาเป็นเวลาเท่าใด ________ ปี _________ เดือน

5. ลักษณะงาน

☐ งานอำนวยการ ☐ งานสืบสวนสอบสวน

☐ ☐

งานป้องกันปราบปราม งานจราจร

☐ อื่นๆ (กรุณาระบุ) __________

ความรู้สึกของท่านโดยปกติ

คำถามต่อไปนี้เกี่ยวข้องกับอารมณ์ และความรู้สึกของท่าน

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

โดยปกติแล้วท่านมีอารมณ์ และความรู้สึกต่อไปนี้ในระดับใด	**ไม่เลย**	**เล็กน้อย**	**ปานกลาง**	**ค่อนข้างมาก**	**มากที่สุด**
1. เข้มแข็ง					
2. รู้สึกผิด					
3. กระตือรือร้น					
4. หงุดหงิด รำคาญ					
5. ละอาย					
6. กระวนกระวาย					
7. มุ่งมั่น					

8. ใส่ใจ					
9. กระฉับกระเฉง					
10. หวั่นเกรง					

จำนวนงานที่ท่านต้องรับผิดชอบ

คำถามต่อไปนี้เกี่ยวข้องกับจำนวนงานที่ท่านต้องรับผิดชอบ

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

ในวันทำงานปกติ ท่านพบว่าท่านต้องเผชิญกับสถานการณ์ต่อไปนี้ในระดับใด :	**ไม่เลย**	**เล็กน้อย**	**พอสมควร**	**ค่อนข้างมาก**	**อย่างมาก**

1. เสาะหาหนทางหลีกหนีจากสภาวะงานที่กดดัน					
2. อยู่ภายใต้แรงกดดันของการทำงานให้ทันเวลา					
3. มีจำนวนงานเพิ่มขึ้นมากเกินกว่าที่จะทำให้เสร็จ					
4. ต้องทำงานให้เร็วเกินกว่าที่ท่านต้องการ					
5. ถูกผลักดันโดยเส้นตายในการกำหนดส่งงาน					

ลักษณะงานของท่าน

คำถามต่อไปนี้เกี่ยวข้องกับลักษณะงานของท่านที่ท่านต้องรับผิดชอบ

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

ท่านพบว่าโดยลักษณะงานของท่าน **ทำให้ท่านต้องเผชิญกับสถานการณ์ต่อไปนี้ในระดับใด:**	**ไม่เลย**	**เล็กน้อย**	**พอสมควร**	**ค่อนข้างมาก**	**อย่างมาก**
1. อุปกรณ์และเครื่องมือที่เกี่ยวกับการทำงาน (รถยนต์, จักรยานยนต์, เครื่องจักร ฯลฯ) สร้างความเสี่ยงต่อสุขภาพของท่าน					
2. บุคคลที่ท่านต้องเผชิญในการทำงานมีการแสดงออกถึงความรุนแรง ซึ่งอาจคุกคามและสร้างความเสี่ยงต่อชีวิตของท่าน					
3. ผลกระทบจากสภาพการทำงาน (มลพิษ, ไฟ, สารเคมี หรือสัตว์อันตราย ฯลฯ) สร้างความเสี่ยงต่อสุขภาพของท่าน					

ความคิดเห็นของท่านที่มีต่องาน

คำถามต่อไปนี้เกี่ยวข้องกับความคิดเห็นของท่านที่มีต่องานที่ท่านต้องรับผิดชอบ

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

	ไม่ถูกต้องที่สุด	ไม่ถูกต้องอย่างมาก	ไม่ถูกต้องเล็กน้อย	ไม่แน่ใจ	ถูกต้องเล็กน้อย	ถูกต้องอย่างมาก	ถูกต้องที่สุด
1. งานของท่านยินยอมให้ท่านตัดสินใจเกี่ยวกับวิธีการดำเนินงานด้วยต							

นเอง							
2. งานของท่านเปิดโอกาสให้ท่านอย่างมากในการทำงานอย่างอิสระ							
3. งานของท่านให้โอกาสท่านได้ใช้วิจารณญาณและการตัดสินใจส่วนตัวในการดำเนินงาน							

การสนับสนุนจากหัวหน้างาน และเพื่อนร่วมงาน

คำถามต่อไปนี้เกี่ยวข้องกับระดับของการสนับสนุนที่ท่านได้รับจากหัวหน้างาน และเพื่อนร่วมงานของท่าน

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√)
ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

ไม่เห็นด้วยอย่างที่สุด	ไม่เห็นด้วยอย่างมาก	ไม่เห็นด้วยเล็กน้อย	ไม่แน่ใจ	เห็นด้วยเล็กน้อย	เห็นด้วยอย่างมาก	เห็นด้วยอย่างที่สุด
1	2	3	4	5	6	7

	1	2	3	4	5	6	7
1. หัวหน้าของท่านใส่ใจในความก้าวหน้าของท่านในองค์การ							
2. ท่านสามารถพูดคุยปรึกษาปัญหาต่างๆที่เกี่ยวกับการทำงานกับหัวหน้าของท่านได้อย่างสบายใจ							
3. หัวหน้าของท่านสนับสนุนท่าน 100%							
4. หัวหน้าของท่านคอยหนุนหลังท่าน และยินยอมให้ท่านเรียนรู้จากความผิดพลาดของท่าน							
5. ท่านสามารถพึ่งพาหัวหน้าของท่านเมื่อท่านต้องการความช่วยเหลือในการทำงาน							
6. ท่านมั่นใจว่าเมื่อท่านประสบกับอุปสรรคในการทำงาน เพื่อนร่วมงานของท่านจะพยายามช่วยเหลือท่าน							
7. ท่านเชื่อว่าเพื่อนร่วมงานของท่านจะยื่นมือช่วยเหลือท่านเมื่อท่านต้องการ							
8. เพื่อนร่วมงานของท่านส่วนใหญ่สามารถไว้ใจได้ว่าจะรักษาสัญญา และจะทำในสิ่งที่เขาสัญญาว่าจะทำ							

ความรู้สึกของท่านที่มีต่องาน

คำถามต่อไปนี้เกี่ยวข้องกับความรู้สึกของท่านที่มีต่องานที่ท่านต้องรับผิดชอบ

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

ท่านพบว่าโดยลักษณะงานของท่านทำให้ท่านต้องเผชิญกับสถานการณ์ต่อไปนี้ในระดับใด:	**ไม่เลย**	**เล็กน้อย**	**พอสมควร**	**ค่อนข้างมาก**	**อย่างมาก**
1. ต้องยับยั้งที่จะแสดงออกถึงความรู้สึกที่แท้จริงของท่าน					
2. ต้องแสร้งแสดงอารมณ์ที่ต่างจากอารมณ์ที่แท้จริงของท่าน					
3. ต้องซ่อนความรู้สึกที่แท้จริงของท่านต่อสถานการณ์ต่างๆในการทำงาน					
4. ต้องพยายามที่จะทำให้อารมณ์ที่ท่านต้องแสดงออกต่อผู้อื่น กลายเป็นอารมณ์ที่แท้จริงของท่าน					
5.					

ต้องพยายามที่จะรู้สึกว่าอารมณ์ที่ท่านแสดงออกเป็นอารมณ์ที่แท้จริงของท่าน					
6. ต้องพยายามที่จะรู้สึกอย่างแท้จริงถึงอารมณ์ที่ท่านต้องแสดงออกขณะที่ปฏิบัติงาน					

ความพึงพอใจต่องานของท่าน

คำถามต่อไปนี้เกี่ยวข้องกับความพึงพอใจที่ท่านมีต่องานของท่าน

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

	ไม่เห็นด้วย	**ไม่เห็นด้วย**	**ไม่เห็นด้ว**	**ไม่**	**เห็นด้วย**	**เห็นด้วย**	**เห็นด้วย**

	อย่างที่สุด	อย่างมาก	ยเล็กน้อย	แน่ใจ	เล็กน้อย	อย่างมาก	อย่างที่สุด
1. กล่าวโดยทั่วไปแล้ว ท่านรู้สึกพอใจในงานของท่านอย่างมาก							
2. ท่านคิดว่างานของท่านทำให้ท่านรู้สึกพึงพอใจ							
3. โดยทั่วไปแล้วท่านรู้สึกพอใจในลักษณะของงานที่ท่านทำอยู่							

สุขภาพของท่านในระยะที่ผ่านมา

ผู้วิจัยต้องการทราบถึงสุขภาพโดยทั่วไปของท่านในช่วง 2-3 สัปดาห์ที่ผ่านมา

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

ในระยะ 2-3 สัปดาห์ที่ผ่านมาท่าน:	**ไม่เคยเลย**	**น้อยมาก**	**ค่อนข้างน้อย**	**ค่อนข้างมาก**	**ส่วนใหญ่**	**ตลอดเวลา**
1. สามารถมีสมาธิขณะทำงานต่างๆได้ดี						
2. รู้สึกว่าท่านมีบทบาทสำคัญในงานต่างๆที่ท่านทำ						
3. รู้สึกว่าท่านมีส่วนในการตัดสินใจเกี่ยวกับงานที่ท่านทำ						
4. รู้สึกมีความสุขกับการทำงานปกติประจำวัน						
5. สามารถเผชิญกับปัญหาต่างๆในการทำงานได้						

6. รู้สึกว่าท่านมีความสุขกับสิ่งต่างๆรอบตัวพอสมควร						

สุขภาพของท่านในระยะที่ผ่านมา

ผู้วิจัยต้องการทราบถึงสุขภาพโดยทั่วไปของท่านในช่วง 2-3 สัปดาห์ที่ผ่านมา

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

ในระยะ 2-3 สัปดาห์ที่ผ่านมาท่าน:	**ไม่เคยเลย**	**น้อยมาก**	**ค่อนข้างน้อย**	**ค่อนข้างมาก**	**ส่วนใหญ่**	**ตลอดเวลา**
1. นอนไม่หลับเพราะความวิตกกังวล						
2. รู้สึกว่าท่านอยู่ภายใต้สภาวะกดดันตลอดเวลา						
3.						

รู้สึกว่าท่านไม่สามารถจัดการกับอุปสรรคต่างๆในการทำงานได้						
4. รู้สึกไม่มีความสุขและท้อแท้ใจ						
5. รู้สึกสูญเสียความมั่นใจในตนเอง						
6. รู้สึกว่าตนเองด้อยคุณค่า						

สุขภาพของท่านในระยะที่ผ่านมา

ผู้วิจัยต้องการทราบถึงสุขภาพโดยทั่วไปของท่านในช่วง 2-3 สัปดาห์ที่ผ่านมา

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

ในระยะ2-3 สัปดาห์ที่ผ่านมาท่านมีอาการเหล่านี้บ่อยเท่าใด	**ไม่เคยเลย**	**น้อยมาก**	**ค่อนข้างน้อย**	**ค่อนข้างมาก**	**ส่วนใหญ่**	**ตลอดเวลา**
1. รู้สึกโกรธบุคคลรอบข้างอย่างไร้เหตุผล						
2. อารมณ์เสียง่ายเมื่อต้องติดต่อกับบุคคลอื่น ๆ						
3. อารมณ์แปรปรวนง่าย						
4. หาเรื่องผู้อื่นเมื่อรู้สึกขัดอกขัดใจ						
5. มีข้อขัดแย้งหรือทะเลาะเบาะแว้งกับผู้อื่น						

อารมณ์ และความรู้สึกของท่านในช่วงระยะ ๒สัปดาห์ที่ผ่านมา

คำถามต่อไปนี้เกี่ยวข้องกับอารมณ์ และความรู้สึกของท่าน

กรุณาตอบทุกคำถามโดยกาเครื่องหมายถูก (√) ในช่องที่ท่านเห็นว่าใกล้เคียงกับความเห็นของท่านที่สุด

ในช่วงระยะ ๒สัปดาห์ที่ผ่านมาท่านมีอารมณ์ และความรู้สึกต่อไปนี้ในระดับใด	**ไม่เลย**	**เล็กน้อย**	**ปานกลาง**	**ค่อนข้างมาก**	**มากที่สุด**
1. ใส่ใจ					
2. มุ่งมั่น					
3. กระฉับกระเฉง					
4. เข้มแข็ง					
5. กระตือรือร้น					

กรุณาส่งคืนแบบสอบถาม

เมื่อท่านตอบแบบสอบถามเสร็จสิ้นแล้ว
กรุณาย้อนกลับไปตรวจสอบว่าท่านได้ตอบทุกคำถามสมบูรณ์
หรือไม่ จากนั้นกรุณานำแบบสอบถามส่งคืนให้ตัวแทนผู้วิจัย

ผู้วิจัยขอขอบคุณในความร่วมมือของท่านเป็นอย่างสูง

Appendix II
Meta-Analysis (Surface acting and Emotional exhaustion)

```
**************************************************************
*                                                            *
*         RESULTS OF META-ANALYSIS FOR EFFECT SIZES r        *
*                                                            *
**************************************************************

File Name: leart2.dat   Total N =  6948   Number of Studies: k =    22

 Unweighted Analysis:
 -------------------------------------------
 Population effect size (unweighted mean r) =  0.34727
 Explained variance                r-square =  0.12060
 Corresponding Z in Normal Distribution     = 29.87626
 Significance                            p =  0.00000

 Observed variance of effect sizes          =  0.01112
 Observed standard deviation                =  0.10545
 95% confidence interval of pop. effect size:
 from 0.303208 to 0.391338

 Mean standardized difference            g =  0.74064
 Binomial effect size display (BESD (Rosenthal)):
 Success rate from  0.32636 to  0.67364
   Fail Safe N for critical r of .05   = 130.80000
   Fail Safe N for critical r of .10   = 54.40000
   Fail Safe N for critical r of .15   = 28.93333
   Fail Safe N for critical r of .20   = 16.20000

 Analysis by the Schmidt-Hunter-Method :
 -------------------------------------------
```

```
Population effect size (weighted mean r)   =  0.36288
Explained variance               r-square =  0.13168
Corresponding Z in Normal Distribution     = 31.31548
Significance                          p =  0.00000

Observed variance of effect sizes          =  0.00892
Observed standard deviation                =  0.09444
95% confidence interval of pop. effect size:
from 0.204462 to 0.521289

Variance due to sampling error             =  0.00239
Population or residual variance            =  0.00653
Residual standard deviation                =  0.08082
  <  than 1/4 of population ES = 0.091                 ---> homogeneous
Percentage of observed variance accounted
for by sampling error                      =  26.77 %   ---> heterogeneous
Test of homogeneity          Chi-square    = 82.19660   ---> heterogeneous
Degrees of freedom                 df      =  21
Significance                        p      =   0.000000

Mean standardized difference            g =  0.77884
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.31856 to  0.68144
  Fail Safe N for critical r of .05   = 137.66528
  Fail Safe N for critical r of .10   = 57.83264
  Fail Safe N for critical r of .15   = 31.22176
  Fail Safe N for critical r of .20   = 17.91632

Results after Correction for Attenuation
(based on reliabilities of measures)
**********************************************************
# of X variables with reliabilities :   22
# of Y variables with reliabilities :   19
Mean of all square roots r[xx]      =  0.88616
Mean of all square roots r[yy]      =  0.94135
Variance of all square roots r[xx]  =  0.00244
Variance of all square roots r[yy]  =  0.00018

"True" population effect size       =  0.43500
Explained variance r(True) square   =  0.18923
Corresponding Z in Normal Distribution     = 38.17010
Significance                          p =  0.00000
Observed variance of effect sizes   =  0.00892
Variance due to artifacts           =  0.00278
Standard deviation due to artifacts =  0.05273
Population or residual variance     =  0.00882
Residual standard deviation         =  0.09393
95% confidence interval of true population effect size:
From  0.25091 to  0.61910
Percent variance due to unreliability  =   4.41%
Percent variance due to sampling error =  26.77%
Percent variance due to all artifacts  =  31.17%
Mean standardized difference            g =  0.96622
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.28250 to  0.71750
  Fail Safe N for critical r of .05   = 169.40213
  Fail Safe N for critical r of .10   = 73.70107
  Fail Safe N for critical r of .15   = 41.80071
  Fail Safe N for critical r of .20   = 25.85053

****************************************************************
*    Analysis with Fishers z-Transformation                    *
*    see Hedges & Olkin, 1985, p. 229-236.                     *
****************************************************************
Fishers z (for unweighted mean r)       z =  0.36751
Fishers z (for pop. eff.size, Hunter)   z =  0.38449
Fishers z (for pop. eff.size, Hedges)   z =  0.38465
Population effect size (Hedges & Olkin) r =  0.36674
Test of homogeneity (Hedges & Olkin   ) Q =  81.9392
Degrees of freedom                     df =  21
Significance                            p =   0.000000

Unweighted Analysis:
-------------------------------------------
Population effect size (unweighted mean r) =  0.35181
Explained variance               r-square =  0.12377
Corresponding Z in Normal Distribution     = 30.29376
```

```
Significance                            p =  0.00000

Observed variance of effect sizes         =  0.01488
Observed standard deviation               =  0.12199
95% confidence interval of pop. effect size:
from 0.330943 to 0.372342

Mean standardized difference            g =  0.79033
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.32409 to  0.67591
  Fail Safe N for critical r of .05   = 132.79831
  Fail Safe N for critical r of .10   = 55.39915
  Fail Safe N for critical r of .15   = 29.59944
  Fail Safe N for critical r of .20   = 16.69958

Analysis by the Schmidt-Hunter-Method :
-------------------------------------------
Population effect size (weighted mean r)   =  0.36660
Explained variance               r-square =  0.13439
Corresponding Z in Normal Distribution     = 31.66084
Significance                            p =  0.00000

Observed variance of effect sizes         =  0.00939
Observed standard deviation               =  0.09689
95% confidence interval of pop. effect size:
from 0.345971 to 0.386869

Variance due to sampling error            =  0.00230
Population or residual variance           =  0.00709
Residual standard deviation               =  0.08419
  <  than 1/4 of population ES = 0.092               ---> homogeneous
Percentage of observed variance accounted
for by sampling error                     =  24.50 %   ---> heterogeneous
Test of homogeneity          Chi-square    = 87.04368   ---> heterogeneous
Degrees of freedom                 df     =  21
Significance                        p     =   0.000000

Mean standardized difference            g =  0.83301
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.31670 to  0.68330
  Fail Safe N for critical r of .05   = 139.30279
  Fail Safe N for critical r of .10   = 58.65139
  Fail Safe N for critical r of .15   = 31.76760
  Fail Safe N for critical r of .20   = 18.32570

Results after Correction for Attenuation
(based on reliabilities of measures)
**********************************************************
# of X variables with reliabilities :   22
# of Y variables with reliabilities :   19
Mean of all square roots r[xx]      =  0.88616
Mean of all square roots r[yy]      =  0.94135
Variance of all square roots r[xx]  =  0.00244
Variance of all square roots r[yy]  =  0.00018

"True" population effect size       =  0.43083
Explained variance r(True) square   =  0.18561
Corresponding Z in Normal Distribution     = 37.76287
Significance                            p =  0.00000
Observed variance of effect sizes   =  0.00939
Variance due to artifacts           =  0.00274
Standard deviation due to artifacts =  0.05235
Population or residual variance     =  0.00955
Residual standard deviation         =  0.09773
95% confidence interval of true population effect size:
From  0.23928 to  0.62237
Percent variance due to unreliability  =   4.70%
Percent variance due to sampling error =  24.50%
Percent variance due to all artifacts  =  29.20%
Mean standardized difference            g =  1.03874
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.28459 to  0.71541
  Fail Safe N for critical r of .05   = 167.56366
  Fail Safe N for critical r of .10   = 72.78183
  Fail Safe N for critical r of .15   = 41.18789
  Fail Safe N for critical r of .20   = 25.39092
```

```
Meta-Analysis (Surface acting and Job satisfaction)

************************************************************
*                                                          *
*         RESULTS OF META-ANALYSIS FOR EFFECT SIZES r      *
*                                                          *
************************************************************

File Name: leart1.dat   Total N =  4698   Number of Studies: k =    13

 Unweighted Analysis:
 -------------------------------------------
 Population effect size (unweighted mean r) = -0.30923
 Explained variance                r-square =  0.09562
 Corresponding Z in Normal Distribution     = -21.72426
 Significance                         p =  0.00000

 Observed variance of effect sizes          =  0.01221
 Observed standard deviation                =  0.11049
 95% confidence interval of pop. effect size:
 from -0.369292 to -0.249170

 Mean standardized difference            g = -0.65034
 Binomial effect size display (BESD (Rosenthal)):
 Success rate from  0.65462 to  0.34538
   Fail Safe N for critical r of .05   = 67.40000
   Fail Safe N for critical r of .10   = 27.20000
   Fail Safe N for critical r of .15   = 13.80000
   Fail Safe N for critical r of .20   =  7.10000

 Analysis by the Schmidt-Hunter-Method :
 -------------------------------------------
 Population effect size (weighted mean r)   = -0.34623
 Explained variance                r-square =  0.11988
 Corresponding Z in Normal Distribution     = -24.48642
 Significance                         p =  0.00000

 Observed variance of effect sizes          =  0.01307
 Observed standard deviation                =  0.11431
 95% confidence interval of pop. effect size:
 from -0.551073 to -0.141392

 Variance due to sampling error             =  0.00214
 Population or residual variance            =  0.01092
 Residual standard deviation                =  0.10451
   >  than 1/4 of population ES = 0.087                ---> heterogeneous
 Percentage of observed variance accounted
 for by sampling error                      =  16.41 %   ---> heterogeneous
 Test of homogeneity          Chi-square    = 79.24373   ---> heterogeneous
 Degrees of freedom                  df     =  12
 Significance                         p     =   0.000000

 Mean standardized difference            g = -0.73812
 Binomial effect size display (BESD (Rosenthal)):
 Success rate from  0.67312 to  0.32688
   Fail Safe N for critical r of .05   = 77.02043
   Fail Safe N for critical r of .10   = 32.01022
   Fail Safe N for critical r of .15   = 17.00681
   Fail Safe N for critical r of .20   =  9.50511

 Results after Correction for Attenuation
 (based on reliabilities of measures)
 ********************************************************
 # of X variables with reliabilities :   13
 # of Y variables with reliabilities :   11
 Mean of all square roots r[xx]       =  0.89544
 Mean of all square roots r[yy]       =  0.88462
 Variance of all square roots r[xx]   =  0.00280
 Variance of all square roots r[yy]   =  0.00655

 "True" population effect size        = -0.43709
 Explained variance r(True) square    =  0.19105
 Corresponding Z in Normal Distribution     = -31.55221
 Significance                          p =  0.00000
 Observed variance of effect sizes    =  0.01307
```

```
Variance due to artifacts           =  0.00355
Standard deviation due to artifacts  =  0.05959
Population or residual variance      =  0.01516
Residual standard deviation          =  0.12314
95% confidence interval of true population effect size:
From -0.67846 to -0.19573
Percent variance due to unreliability  =  10.77%
Percent variance due to sampling error =  16.41%
Percent variance due to all artifacts  =  27.18%
Mean standardized difference            g = -0.97195
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.71855 to  0.28145
  Fail Safe N for critical r of .05   = 100.64465
  Fail Safe N for critical r of .10   = 43.82233
  Fail Safe N for critical r of .15   = 24.88155
  Fail Safe N for critical r of .20   = 15.41116

****************************************************************
*    Analysis with Fishers z-Transformation                    *
*    see Hedges & Olkin, 1985, p. 229-236.                     *
****************************************************************
Fishers z (for unweighted mean r)       z = -0.32419
Fishers z (for pop. eff.size, Hunter)   z = -0.36634
Fishers z (for pop. eff.size, Hedges)   z = -0.36669
Population effect size (Hedges & Olkin) r = -0.35110
Test of homogeneity (Hedges & Olkin   ) Q =  74.8508
Degrees of freedom                     df =  12
Significance                            p =   0.000000

Unweighted Analysis:
-------------------------------------------
Population effect size (unweighted mean r) = -0.31329
Explained variance               r-square =  0.09815
Corresponding Z in Normal Distribution     = -22.02457
Significance                             p =  0.00000

Observed variance of effect sizes          =  0.01494
Observed standard deviation                =  0.12223
95% confidence interval of pop. effect size:
from -0.338949 to -0.287165

Mean standardized difference             g = -0.68540
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.65664 to  0.34336
  Fail Safe N for critical r of .05   = 68.45540
  Fail Safe N for critical r of .10   = 27.72770
  Fail Safe N for critical r of .15   = 14.15180
  Fail Safe N for critical r of .20   =  7.36385

Analysis by the Schmidt-Hunter-Method :
-------------------------------------------
Population effect size (weighted mean r)   = -0.35079
Explained variance               r-square =  0.12305
Corresponding Z in Normal Distribution     = -24.83048
Significance                             p =  0.00000

Observed variance of effect sizes          =  0.01347
Observed standard deviation                =  0.11606
95% confidence interval of pop. effect size:
from -0.375711 to -0.325356

Variance due to sampling error             =  0.00207
Population or residual variance            =  0.01140
Residual standard deviation                =  0.10675
  >  than 1/4 of population ES = 0.088                 ---> heterogeneous
Percentage of observed variance accounted
for by sampling error                      =  15.40 %   ---> heterogeneous
Test of homogeneity          Chi-square    = 82.28874   ---> heterogeneous
Degrees of freedom                  df     =  12
Significance                         p     =   0.000000

Mean standardized difference             g = -0.78742
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.67539 to  0.32461
  Fail Safe N for critical r of .05   = 78.20467
  Fail Safe N for critical r of .10   = 32.60234
  Fail Safe N for critical r of .15   = 17.40156
```

```
  Fail Safe N for critical r of .20   =  9.80117

Results after Correction for Attenuation
(based on reliabilities of measures)
**********************************************************
# of X variables with reliabilities :   13
# of Y variables with reliabilities :   11
Mean of all square roots r[xx]      =  0.89544
Mean of all square roots r[yy]      =  0.88462
Variance of all square roots r[xx]   =  0.00280
Variance of all square roots r[yy]   =  0.00655

"True" population effect size        = -0.43210
Explained variance r(True) square    =  0.18671
Corresponding Z in Normal Distribution     = -31.15171
Significance                         p =  0.00000
Observed variance of effect sizes    =  0.01347
Variance due to artifacts            =  0.00365
Standard deviation due to artifacts  =  0.06041
Population or residual variance      =  0.01565
Residual standard deviation          =  0.12510
95% confidence interval of true population effect size:
From -0.67731 to -0.18690
Percent variance due to unreliability  =  11.70%
Percent variance due to sampling error =  15.40%
Percent variance due to all artifacts  =  27.10%
Mean standardized difference            g = -1.04323
Binomial effect size display (BESD (Rosenthal)):
Success rate from  0.71605 to  0.28395
  Fail Safe N for critical r of .05   = 99.34701
  Fail Safe N for critical r of .10   = 43.17350
  Fail Safe N for critical r of .15   = 24.44900
  Fail Safe N for critical r of .20   = 15.08675
```

Appendix III Confirmatory Factor Analysis

Appendix 3.1 Calibration Analysis of the Seven-Construct well-being Measurement Model (all sample)

```
------------------------------------------------------------------Page Break----------------------------------------
-------------------------1
  EQS, A STRUCTURAL EQUATION PROGRAM          MULTIVARIATE SOFTWARE, INC.
  COPYRIGHT BY P.M. BENTLER                   VERSION 6.1 (C) 1985 - 2006 (B91).


    PROGRAM CONTROL INFORMATION

  /TITLE
  MEASUREMENT dv MODEL: ALL SAMPLE
  /SPECIFICATIONS
  DATA='I:\EQS\DatafileandOutput\target.ESS';
  VARIABLES=99; CASES=408;
  METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
  /LABELS
  V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
  V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
  V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
  V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
  V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
  V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
  V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
  V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
  V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
  V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
  V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
  V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
  V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
  V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
  V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
  V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
  V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
  V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
  V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
  V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
  /EQUATIONS
  V9 =   *F1 + E9;
  V10 =   *F2 + E10;
  V11 =   *F1 + E11;
```

```
V12 =   *F2 + E12;
V13 =   *F2 + E13;
V14 =   *F2 + E14;
V15 =   *F1 + E15;
V16 =   *F1 + E16;
V17 =   *F1 + E17;
V18 =   *F2 + E18;
V44 =   *F3 + E44;
V45 =   *F3 + E45;
V46 =   *F3 + E46;
V55 =   *F4 + E55;
V56 =   *F4 + E56;
V57 =   *F4 + E57;
V58 =   *F4 + E58;
V59 =   *F4 + E59;
V61 =   *F5 + E61;
V67 =   *F5 + E67;
V68 =   *F5 + E68;
V69 =   *F6 + E69;
V70 =   *F6 + E70;
V71 =   *F6 + E71;


17-May-07      PAGE :  2  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

V72 =   *F5 + E72;
V73 =   *F7 + E73;
V74 =   *F7 + E74;
V75 =   *F7 + E75;
V76 =   *F7 + E76;
V77 =   *F7 + E77;
/VARIANCES
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 F2 = 1;
 F3 = 1;
 F4 = 1;
 F5 = 1;
 F6 = 1;
 F7 = 1;
 E9 = *;
 E10 = *;
 E11 = *;
 E12 = *;
 E13 = *;
 E14 = *;
 E15 = *;
 E16 = *;
 E17 = *;
 E18 = *;
 E44 = *;
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 E67 = *;
 E68 = *;
 E69 = *;
 E70 = *;
 E71 = *;
 E72 = *;
 E73 = *;
 E74 = *;
 E75 = *;
 E76 = *;
 E77 = *;
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F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;


17-May-07      PAGE :  3  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

F3,F6 = *;
F4,F6 = *;
F5,F6 = *;
F1,F7 = *;
F2,F7 = *;
F3,F7 = *;
F4,F7 = *;
F5,F7 = *;
F6,F7 = *;
/PRINT
EIS;
FIT=ALL;
TABLE=EQUATION;
/LMTEST
```

```
PROCESS=SIMULTANEOUS;
SET=PVV,PFV,PFF,PDD,GVV,GVF,GFV,GFF,
BVF,BFF;
/WTEST
PVAL=0.05;
PRIORITY=ZERO;
/END
```

```
   130 RECORDS OF INPUT MODEL FILE WERE READ


  DATA IS READ FROM I:\EQS\DatafileandOutput\target.ESS
  THERE ARE  99 VARIABLES AND   408 CASES
  IT IS A RAW DATA ESS FILE

*** WARNING ***    18 CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
    9    56    62    82    87    90    99   192   216   247
  259   300   323   330   344   347   365   367


17-May-07      PAGE :  4  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE


 SAMPLE STATISTICS BASED ON COMPLETE CASES
```

UNIVARIATE STATISTICS

VARIABLE	PA1 V9	NA1 V10	PA2 V11	NA2 V12	NA3 V13
MEAN	3.7692	2.6410	3.7641	2.4821	2.5487
SKEWNESS (G1)	-.1062	.0587	-.3739	.2297	.1661
KURTOSIS (G2)	-.3795	-.7158	.1522	-.3102	-.9793
STANDARD DEV.	.8226	1.0776	.7892	.9531	1.1788

VARIABLE	NA4 V14	PA3 V15	PA4 V16	PA5 V17	NA5 V18
MEAN	2.3821	3.9179	3.9667	3.8282	2.4000
SKEWNESS (G1)	.2788	-.5347	-.5872	-.4933	.4206
KURTOSIS (G2)	-.5842	.2860	.5299	.2633	-.5392
STANDARD DEV.	1.0091	.8039	.7564	.8009	1.1127

VARIABLE	SAT1 V44	SAT2 V45	SAT3 V46	ANGER1 V55	ANGER2 V56
MEAN	5.1359	5.1846	5.1462	2.3026	2.0051
SKEWNESS (G1)	-.7505	-.7270	-.7379	.7088	.9270
KURTOSIS (G2)	.4027	.5051	.1452	-.0582	.1650
STANDARD DEV.	1.3393	1.2693	1.3497	1.1476	1.0635

VARIABLE	ANGE3 V57	ANGER4 V58	ANGER5 V59	GHQ1 V61	GHQ7 V67
MEAN	2.1179	2.1179	1.8462	3.1744	3.2077
SKEWNESS (G1)	.8730	.9597	1.1686	.4466	.2256
KURTOSIS (G2)	.1577	.2964	.5016	.4069	-.1278
STANDARD DEV.	1.1022	1.1389	1.0741	1.0970	1.1452

VARIABLE	GHQ8 V68	GHQ9 V69	GHQ10 V70	GHQ11 V71	GHQ12 V72
MEAN	3.1359	2.5667	2.4897	2.2821	3.2564
SKEWNESS (G1)	.2764	.4202	.2842	.6920	.3079
KURTOSIS (G2)	.1356	-.4401	-.6637	.0055	.2532
STANDARD DEV.	1.0825	1.1244	1.0797	1.1506	1.0760

VARIABLE	WELLB1 V73	WELLB2 V74	WELLB3 V75	WELLB4 V76	WELLB5 V77
MEAN	3.7179	3.7769	3.7179	3.7923	3.7308
SKEWNESS (G1)	-.3476	-.3771	-.4282	-.3653	-.5274
KURTOSIS (G2)	.1564	.0694	.2410	-.1964	.1122
STANDARD DEV.	.8315	.8294	.8315	.8517	.9052

MULTIVARIATE KURTOSIS

MARDIA'S COEFFICIENT (G2,P) = 342.7978
NORMALIZED ESTIMATE = 77.2484

ELLIPTICAL THEORY KURTOSIS ESTIMATES

MARDIA-BASED KAPPA = .3571 MEAN SCALED UNIVARIATE KURTOSIS = -.0023

MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA= .3571

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	53	84	176	187	238
ESTIMATE	2554.1430	2094.6957	2050.6611	2096.7732	2074.0031

TITLE: MEASUREMENT dv MODEL: ALL SAMPLE

COVARIANCE MATRIX TO BE ANALYZED: 30 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 390 CASES.

		PA1	NA1	PA2	NA2	NA3
		V9	V10	V11	V12	V13
PA1	V9	.677				
NA1	V10	-.137	1.161			
PA2	V11	.429	-.105	.623		
NA2	V12	-.197	.510	-.153	.908	
NA3	V13	-.176	.809	-.135	.524	1.390
NA4	V14	-.200	.533	-.174	.571	.620
PA3	V15	.413	-.107	.425	-.171	-.130
PA4	V16	.375	-.079	.411	-.138	-.118
PA5	V17	.418	-.124	.443	-.146	-.160
NA5	V18	-.154	.609	-.137	.580	.675
SAT1	V44	.201	.188	.161	.058	.082
SAT2	V45	.148	.128	.141	.052	.114
SAT3	V46	.183	.158	.173	.066	.146
ANGER1	V55	-.107	.263	-.111	.358	.283
ANGER2	V56	-.186	.166	-.176	.288	.162
ANGE3	V57	-.166	.210	-.155	.357	.202
ANGER4	V58	-.181	.192	-.175	.354	.213
ANGER5	V59	-.164	.145	-.196	.293	.175
GHQ1	V61	-.196	-.104	-.116	.013	.022
GHQ7	V67	-.129	-.105	-.110	.023	-.078
GHQ8	V68	-.179	-.200	-.120	-.043	-.226
GHQ9	V69	-.134	.207	-.146	.323	.159
GHQ10	V70	-.110	.187	-.118	.293	.101
GHQ11	V71	-.128	.155	-.090	.213	.004
GHQ12	V72	-.159	-.108	-.094	-.008	-.087
WELLB1	V73	.403	-.197	.355	-.270	-.223
WELLB2	V74	.411	-.178	.364	-.250	-.196
WELLB3	V75	.379	-.176	.357	-.216	-.161
WELLB4	V76	.402	-.180	.334	-.221	-.174
WELLB5	V77	.372	-.179	.355	-.243	-.173

		NA4	PA3	PA4	PA5	NA5
		V14	V15	V16	V17	V18
NA4	V14	1.018				
PA3	V15	-.164	.646			
PA4	V16	-.149	.460	.572		
PA5	V17	-.171	.464	.475	.641	
NA5	V18	.639	-.157	-.115	-.147	1.238
SAT1	V44	-.008	.209	.202	.229	.105
SAT2	V45	-.001	.203	.191	.196	.067
SAT3	V46	-.020	.215	.190	.205	.090
ANGER1	V55	.306	-.181	-.165	-.220	.331
ANGER2	V56	.325	-.252	-.241	-.284	.286
ANGE3	V57	.397	-.196	-.189	-.244	.382
ANGER4	V58	.415	-.229	-.233	-.293	.374
ANGER5	V59	.352	-.262	-.260	-.309	.321
GHQ1	V61	.049	-.130	-.112	-.086	.035
GHQ7	V67	.026	-.129	-.111	-.106	.107
GHQ8	V68	.005	-.153	-.155	-.103	-.021
GHQ9	V69	.387	-.195	-.192	-.221	.282
GHQ10	V70	.303	-.194	-.184	-.201	.233
GHQ11	V71	.239	-.164	-.181	-.214	.252
GHQ12	V72	.118	-.097	-.110	-.115	.105
WELLB1	V73	-.206	.368	.322	.360	-.234
WELLB2	V74	-.233	.378	.319	.378	-.209
WELLB3	V75	-.185	.347	.299	.368	-.183
WELLB4	V76	-.180	.356	.314	.412	-.189
WELLB5	V77	-.180	.376	.323	.401	-.195

		SAT1	SAT2	SAT3	ANGER1	ANGER2
		V44	V45	V46	V55	V56
SAT1	V44	1.794				
SAT2	V45	1.540	1.611			
SAT3	V46	1.564	1.544	1.822		
ANGER1	V55	-.087	-.082	-.096	1.317	
ANGER2	V56	-.199	-.196	-.209	.780	1.131

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   ANGE3    V57        -.245       -.207       -.259        .784        .827
   ANGER4   V58        -.276       -.245       -.256        .746        .891
   ANGER5   V59        -.303       -.262       -.281        .694        .875
     GHQ1   V61        -.379       -.374       -.432       -.163       -.021
     GHQ7   V67        -.671       -.648       -.714       -.081        .030
     GHQ8   V68        -.471       -.447       -.506       -.139       -.003
     GHQ9   V69        -.422       -.411       -.443        .571        .575
   GHQ10    V70        -.252       -.294       -.288        .543        .627
   GHQ11    V71        -.280       -.299       -.273        .531        .549
   GHQ12    V72        -.392       -.415       -.487       -.109        .024
   WELLB1   V73         .200        .173        .216       -.210       -.214
   WELLB2   V74         .269        .257        .292       -.179       -.199
   WELLB3   V75         .239        .191        .226       -.166       -.178
   WELLB4   V76         .255        .213        .254       -.186       -.266
   WELLB5   V77         .291        .253        .302       -.170       -.215


                      ANGE3      ANGER4      ANGER5       GHQ1        GHQ7
                        V57         V58         V59         V61         V67
   ANGE3    V57        1.215
   ANGER4   V58        1.058       1.297
   ANGER5   V59         .887        .944       1.154
     GHQ1   V61        -.046       -.036        .001       1.203
     GHQ7   V67         .047        .045        .089        .704       1.312
     GHQ8   V68         .004       -.001        .067        .693        .879
     GHQ9   V69         .601        .650        .586        .058        .226
   GHQ10    V70         .631        .680        .636        .053        .104
   GHQ11    V71         .635        .658        .614        .100        .080
   GHQ12    V72         .062        .044        .109        .670        .851
   WELLB1   V73        -.203       -.231       -.211       -.190       -.196
   WELLB2   V74        -.190       -.231       -.214       -.195       -.221
   WELLB3   V75        -.152       -.201       -.200       -.141       -.170
   WELLB4   V76        -.266       -.297       -.281       -.146       -.196
   WELLB5   V77        -.210       -.261       -.234       -.125       -.209


                        GHQ8        GHQ9      GHQ10       GHQ11       GHQ12
                        V68         V69         V70         V71         V72
     GHQ8   V68        1.172
     GHQ9   V69         .041       1.264
   GHQ10    V70         .103        .863       1.166
   GHQ11    V71         .175        .814        .877       1.324
   GHQ12    V72         .783        .155        .087        .115       1.158
   WELLB1   V73        -.126       -.228       -.203       -.185       -.192
   WELLB2   V74        -.173       -.218       -.196       -.184       -.205
   WELLB3   V75        -.126       -.159       -.144       -.118       -.177
   WELLB4   V76        -.162       -.175       -.194       -.219       -.165
   WELLB5   V77        -.179       -.153       -.158       -.150       -.190


                      WELLB1      WELLB2      WELLB3      WELLB4      WELLB5
                        V73         V74         V75         V76         V77
   WELLB1   V73         .691
   WELLB2   V74         .613        .688
   WELLB3   V75         .540        .556        .691
   WELLB4   V76         .504        .540        .543        .725
   WELLB5   V77         .541        .562        .613        .610        .819


 BENTLER-WEEKS STRUCTURAL REPRESENTATION:

       NUMBER OF DEPENDENT VARIABLES = 30
           DEPENDENT V'S :     9   10   11   12   13   14   15   16   17   18
           DEPENDENT V'S :    44   45   46   55   56   57   58   59   61   67
           DEPENDENT V'S :    68   69   70   71   72   73   74   75   76   77

       NUMBER OF INDEPENDENT VARIABLES = 37
           INDEPENDENT F'S :     1    2    3    4    5    6    7
           INDEPENDENT E'S :     9   10   11   12   13   14   15   16   17   18
           INDEPENDENT E'S :    44   45   46   55   56   57   58   59   61   67
           INDEPENDENT E'S :    68   69   70   71   72   73   74   75   76   77

       NUMBER OF FREE PARAMETERS =  81
       NUMBER OF FIXED NONZERO PARAMETERS =  37

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO THE MODEL PROVIDED.
    CALCULATIONS FOR INDEPENDENCE MODEL NOW BEGIN.

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO INDEPENDENCE MODEL.
    CALCULATIONS FOR USER'S MODEL NOW BEGIN.


 3RD STAGE OF COMPUTATION REQUIRED   2551730 WORDS OF MEMORY.
 PROGRAM ALLOCATED 200000000 WORDS

 DETERMINANT OF INPUT MATRIX IS    .34982D-10

*** NOTE *** RESIDUAL-BASED STATISTICS CANNOT BE
             CALCULATED BECAUSE OF PIVOTING PROBLEMS.

 PARAMETER ESTIMATES APPEAR IN ORDER,
 NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.


 RESIDUAL COVARIANCE MATRIX  (S-SIGMA) :


                        PA1         NA1         PA2         NA2         NA3
                        V9          V10         V11         V12         V13
     PA1    V9          .000
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NA1	V10	-.004	.000			
PA2	V11	.036	.032	.000		
NA2	V12	-.075	-.030	-.026	.000	
NA3	V13	-.032	.171	.015	-.064	.000
NA4	V14	-.067	-.053	-.037	.031	-.018
PA3	V15	-.004	.039	-.007	-.036	.029
PA4	V16	-.027	.062	-.006	-.008	.036
PA5	V17	-.014	.028	-.005	-.006	.005
NA5	V18	-.012	-.017	.010	.003	-.007
SAT1	V44	.024	.116	-.023	-.008	.004
SAT2	V45	-.026	.057	-.040	-.013	.037
SAT3	V46	.005	.086	-.011	-.001	.067
ANGER1	V55	.062	.021	.065	.135	.020
ANGER2	V56	.006	-.108	.023	.035	-.137
ANGE3	V57	.048	-.094	.066	.077	-.128
ANGER4	V58	.043	-.127	.057	.061	-.134
ANGER5	V59	.036	-.140	.012	.030	-.136
GHQ1	V61	-.102	-.088	-.018	.029	.041
GHQ7	V67	-.006	-.083	.017	.043	-.054
GHQ8	V68	-.067	-.180	-.003	-.024	-.205
GHQ9	V69	.024	-.021	.017	.113	-.089
GHQ10	V70	.054	-.052	.053	.073	-.158
GHQ11	V71	.030	-.072	.073	.003	-.244
GHQ12	V72	-.051	-.089	.019	.010	-.066
WELLB1	V73	.072	.007	.012	-.082	-.001
WELLB2	V74	.071	.032	.011	-.056	.032
WELLB3	V75	.053	.025	.019	-.031	.058
WELLB4	V76	.084	.015	.005	-.041	.039
WELLB5	V77	.033	.030	.003	-.050	.054

		NA4 V14	PA3 V15	PA4 V16	PA5 V17	NA5 V18
NA4	V14	.000				
PA3	V15	-.018	.000			
PA4	V16	-.008	.017	.000		
PA5	V17	-.019	-.011	.016	.000	
NA5	V18	.013	-.001	.035	.015	.000
SAT1	V44	-.080	.014	.014	.027	.028
SAT2	V45	-.072	.011	.006	-.003	-.008
SAT3	V46	-.092	.019	.001	.002	.014
ANGER1	V55	.064	.006	.016	-.027	.073
ANGER2	V56	.051	-.040	-.037	-.065	-.007
ANGE3	V57	.094	.038	.038	-.001	.058
ANGER4	V58	.096	.017	.005	-.038	.034
ANGER5	V59	.067	-.042	-.047	-.081	.017
GHQ1	V61	.066	-.026	-.013	.021	.053
GHQ7	V67	.048	.006	.019	.035	.130
GHQ8	V68	.025	-.030	-.035	.026	.000
GHQ9	V69	.160	-.022	-.025	-.042	.039
GHQ10	V70	.065	-.012	-.009	-.013	-.021
GHQ11	V71	.011	.009	-.013	-.034	.009
GHQ12	V72	.137	.022	.006	.009	.126
WELLB1	V73	-.002	.004	-.029	-.017	-.016
WELLB2	V74	-.024	.003	-.043	-.010	.015
WELLB3	V75	.016	-.012	-.048	-.004	.032
WELLB4	V76	.015	.007	-.023	.049	.019
WELLB5	V77	.029	.003	-.038	.014	.028

		SAT1 V44	SAT2 V45	SAT3 V46	ANGER1 V55	ANGER2 V56
SAT1	V44	.000				
SAT2	V45	.002	.000			
SAT3	V46	-.005	.000	.000		
ANGER1	V55	.103	.106	.095	.000	
ANGER2	V56	.017	.016	.008	.086	.000
ANGE3	V57	-.006	.028	-.019	.016	-.045
ANGER4	V58	-.025	.001	-.005	-.061	-.024
ANGER5	V59	-.078	-.041	-.055	-.029	.055
GHQ1	V61	.052	.049	.000	-.178	-.038
GHQ7	V67	-.108	-.093	-.149	-.101	.008
GHQ8	V68	.045	.061	.012	-.157	-.024
GHQ9	V69	-.105	-.099	-.125	.071	.008
GHQ10	V70	.080	.033	.045	.019	.033
GHQ11	V71	.037	.013	.046	.030	-.020
GHQ12	V72	.106	.075	.012	-.126	.005
WELLB1	V73	-.035	-.059	-.020	-.034	-.015
WELLB2	V74	.027	.019	.049	.002	.006
WELLB3	V75	.007	-.038	-.007	.007	.018
WELLB4	V76	.029	-.009	.027	-.017	-.075
WELLB5	V77	.050	.015	.059	.010	-.010

		ANGE3 V57	ANGER4 V58	ANGER5 V59	GHQ1 V61	GHQ7 V67
ANGE3	V57	.000				
ANGER4	V58	.044	.000			
ANGER5	V59	-.021	-.010	.000		
GHQ1	V61	-.065	-.056	-.016	.000	
GHQ7	V67	.023	.019	.066	-.031	.000
GHQ8	V68	-.018	-.024	.046	.020	-.003
GHQ9	V69	-.027	-.009	-.005	-.032	.109
GHQ10	V70	-.027	-.011	.017	-.041	-.019
GHQ11	V71	.006	-.003	.022	.010	-.037
GHQ12	V72	.041	.021	.089	.020	.000
WELLB1	V73	.018	.001	-.003	-.041	-.001
WELLB2	V74	.038	.008	.000	-.042	-.020
WELLB3	V75	.066	.028	.005	.006	.022
WELLB4	V76	-.054	-.074	-.082	-.003	-.009
WELLB5	V77	.017	-.023	-.021	.028	-.008

		GHQ8 V68	GHQ9 V69	GHQ10 V70	GHQ11 V71	GHQ12 V72
GHQ8	V68	.000				
GHQ9	V69	-.066	.000			
GHQ10	V70	-.010	-.002	.000		
GHQ11	V71	.067	-.013	.010	.000	
GHQ12	V72	.003	.051	-.021	.011	.000
WELLB1	V73	.053	-.050	-.017	-.007	-.020
WELLB2	V74	.011	-.035	-.005	.000	-.027
WELLB3	V75	.050	.017	.039	.057	-.007
WELLB4	V76	.010	-.005	-.015	-.048	.000
WELLB5	V77	.004	.029	.033	.033	-.013

		WELLB1 V73	WELLB2 V74	WELLB3 V75	WELLB4 V76	WELLB5 V77
WELLB1	V73	.000				
WELLB2	V74	.037	.000			
WELLB3	V75	-.013	-.012	.000		
WELLB4	V76	-.033	-.014	.013	.000	
WELLB5	V77	-.034	-.030	.046	.058	.000

AVERAGE ABSOLUTE RESIDUAL = .0354
AVERAGE OFF-DIAGONAL ABSOLUTE RESIDUAL = .0379

17-May-07 PAGE : 6 EQS Licensee:
TITLE: MEASUREMENT dv MODEL: ALL SAMPLE

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		PA1 V9	NA1 V10	PA2 V11	NA2 V12	NA3 V13
PA1	V9	.000				
NA1	V10	-.005	.000			
PA2	V11	.055	.038	.000		
NA2	V12	-.095	-.030	-.035	.000	
NA3	V13	-.033	.135	.016	-.057	.000
NA4	V14	-.080	-.049	-.046	.032	-.015
PA3	V15	-.006	.045	-.010	-.048	.031
PA4	V16	-.044	.076	-.010	-.011	.040
PA5	V17	-.022	.032	-.008	-.008	.005
NA5	V18	-.014	-.014	.012	.003	-.005
SAT1	V44	.022	.080	-.022	-.007	.002
SAT2	V45	-.025	.042	-.040	-.011	.025
SAT3	V46	.004	.059	-.010	-.001	.042
ANGER1	V55	.066	.017	.072	.123	.015
ANGER2	V56	.007	-.094	.028	.035	-.109
ANGE3	V57	.052	-.079	.076	.073	-.098
ANGER4	V58	.046	-.104	.063	.056	-.100
ANGER5	V59	.041	-.121	.014	.029	-.107
GHQ1	V61	-.113	-.074	-.021	.028	.031
GHQ7	V67	-.007	-.067	.019	.040	-.040
GHQ8	V68	-.075	-.155	-.003	-.023	-.160
GHQ9	V69	.026	-.017	.019	.105	-.067
GHQ10	V70	.061	-.044	.062	.071	-.125
GHQ11	V71	.032	-.058	.081	.003	-.180
GHQ12	V72	-.057	-.077	.022	.009	-.052
WELLB1	V73	.105	.008	.018	-.104	-.001
WELLB2	V74	.103	.035	.016	-.071	.033
WELLB3	V75	.078	.028	.029	-.039	.059
WELLB4	V76	.120	.017	.007	-.050	.039
WELLB5	V77	.044	.031	.005	-.058	.051

		NA4 V14	PA3 V15	PA4 V16	PA5 V17	NA5 V18
NA4	V14	.000				
PA3	V15	-.022	.000			
PA4	V16	-.011	.028	.000		
PA5	V17	-.024	-.017	.026	.000	
NA5	V18	.011	-.002	.042	.016	.000
SAT1	V44	-.059	.013	.014	.025	.019
SAT2	V45	-.056	.011	.006	-.003	-.006
SAT3	V46	-.068	.018	.001	.002	.009
ANGER1	V55	.055	.006	.018	-.029	.057
ANGER2	V56	.047	-.047	-.046	-.076	-.006
ANGE3	V57	.084	.043	.045	-.002	.047
ANGER4	V58	.084	.018	.006	-.042	.027
ANGER5	V59	.062	-.048	-.058	-.094	.014
GHQ1	V61	.059	-.030	-.015	.024	.044
GHQ7	V67	.041	.006	.022	.038	.102
GHQ8	V68	.023	-.034	-.043	.030	.000
GHQ9	V69	.141	-.024	-.029	-.046	.031
GHQ10	V70	.060	-.014	-.011	-.015	-.018
GHQ11	V71	.010	.010	-.015	-.037	.007
GHQ12	V72	.126	.026	.007	.010	.105
WELLB1	V73	-.002	.006	-.047	-.026	-.018
WELLB2	V74	-.028	.005	-.068	-.016	.016
WELLB3	V75	.019	-.018	-.076	-.007	.035
WELLB4	V76	.018	.010	-.036	.073	.021
WELLB5	V77	.032	.004	-.056	.019	.028

		SAT1 V44	SAT2 V45	SAT3 V46	ANGER1 V55	ANGER2 V56

SAT1	V44	.000				
SAT2	V45	.001	.000			
SAT3	V46	-.003	.000	.000		
ANGER1	V55	.067	.072	.061	.000	
ANGER2	V56	.012	.012	.005	.070	.000
ANGE3	V57	-.004	.020	-.013	.012	-.038
ANGER4	V58	-.016	.001	-.003	-.047	-.020
ANGER5	V59	-.054	-.030	-.038	-.023	.048
GHQ1	V61	.035	.035	.000	-.142	-.033
GHQ7	V67	-.070	-.064	-.096	-.076	.006
GHQ8	V68	.031	.044	.008	-.126	-.020
GHQ9	V69	-.070	-.069	-.082	.055	.007
GHQ10	V70	.055	.024	.031	.015	.029
GHQ11	V71	.024	.009	.030	.023	-.016
GHQ12	V72	.073	.055	.008	-.102	.004
WELLB1	V73	-.031	-.056	-.018	-.036	-.017
WELLB2	V74	.024	.018	.044	.002	.007
WELLB3	V75	.006	-.036	-.006	.008	.021
WELLB4	V76	.025	-.008	.024	-.018	-.083
WELLB5	V77	.041	.013	.048	.010	-.010

		ANGE3 V57	ANGER4 V58	ANGER5 V59	GHQ1 V61	GHQ7 V67
ANGE3	V57	.000				
ANGER4	V58	.035	.000			
ANGER5	V59	-.018	-.008	.000		
GHQ1	V61	-.054	-.045	-.014	.000	
GHQ7	V67	.018	.015	.053	-.025	.000
GHQ8	V68	-.015	-.020	.040	.017	-.002
GHQ9	V69	-.022	-.007	-.004	-.026	.085
GHQ10	V70	-.023	-.009	.015	-.034	-.016
GHQ11	V71	.005	-.002	.018	.008	-.028
GHQ12	V72	.034	.018	.077	.017	.000
WELLB1	V73	.019	.001	-.003	-.045	-.001
WELLB2	V74	.041	.009	.000	-.046	-.021
WELLB3	V75	.072	.030	.005	.007	.024
WELLB4	V76	-.057	-.076	-.090	-.003	-.009
WELLB5	V77	.017	-.022	-.022	.028	-.008

		GHQ8 V68	GHQ9 V69	GHQ10 V70	GHQ11 V71	GHQ12 V72
GHQ8	V68	.000				
GHQ9	V69	-.055	.000			
GHQ10	V70	-.008	-.002	.000		
GHQ11	V71	.054	-.010	.008	.000	
GHQ12	V72	.002	.043	-.018	.009	.000
WELLB1	V73	.058	-.054	-.019	-.007	-.022
WELLB2	V74	.013	-.037	-.005	-.001	-.031
WELLB3	V75	.056	.018	.044	.060	-.007
WELLB4	V76	.010	-.005	-.016	-.049	.000
WELLB5	V77	.004	.029	.034	.031	-.014

		WELLB1 V73	WELLB2 V74	WELLB3 V75	WELLB4 V76	WELLB5 V77
WELLB1	V73	.000				
WELLB2	V74	.053	.000			
WELLB3	V75	-.018	-.018	.000		
WELLB4	V76	-.047	-.019	.018	.000	
WELLB5	V77	-.045	-.040	.061	.075	.000

AVERAGE ABSOLUTE STANDARDIZED RESIDUAL = .0332
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUAL = .0355

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V71, V13	-.180	11	V59, V10	-.121
2	V68, V13	-.160	12	V76, V9	.120
3	V68, V10	-.155	13	V61, V9	-.113
4	V61, V55	-.142	14	V56, V13	-.109
5	V69, V14	.141	15	V59, V13	-.107
6	V13, V10	.135	16	V69, V12	.105
7	V72, V14	.126	17	V72, V18	.105
8	V68, V55	-.126	18	V73, V9	.105
9	V70, V13	-.125	19	V73, V12	-.104
10	V55, V12	.123	20	V58, V10	-.104

TITLE: MEASUREMENT dv MODEL: ALL SAMPLE

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DISTRIBUTION OF STANDARDIZED RESIDUALS

```
   ----------------------------------------
   !                                      !
220-               *  *                   -
   !               *  *                   !
   !               *  *                   !
   !               *  *                   !
   !               *  *                   !            RANGE      FREQ PERCENT
165-               *  *                   -
```

```
   !                * *               !   1   -0.5  -  --       0    .00%
   !                * *               !   2   -0.4  -  -0.5     0    .00%
   !                * *               !   3   -0.3  -  -0.4     0    .00%
   !                * *               !   4   -0.2  -  -0.3     0    .00%
 110-               * *               -   5   -0.1  -  -0.2    13   2.80%
   !                * *               !   6    0.0  -  -0.1   219  47.10%
   !                * *               !   7    0.1  -   0.0   223  47.96%
   !                * *               !   8    0.2  -   0.1    10   2.15%
   !                * *               !   9    0.3  -   0.2     0    .00%
  55-               * *               -   A    0.4  -   0.3     0    .00%
   !                * *               !   B    0.5  -   0.4     0    .00%
   !                * *               !   C     ++  -   0.5     0    .00%
   !                * *               !   ------------------------------
   !             * * * *              !          TOTAL       465 100.00%
   ----------------------------------------
      1  2  3  4  5  6  7  8  9  A  B  C    EACH "*" REPRESENTS   11 RESIDUALS


17-May-07      PAGE :  8  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)



 GOODNESS OF FIT SUMMARY FOR METHOD = ML

 INDEPENDENCE MODEL CHI-SQUARE        =    9663.414 ON   435 DEGREES OF FREEDOM

 INDEPENDENCE AIC =    8793.414   INDEPENDENCE CAIC =    6633.140
        MODEL AIC =     132.844          MODEL CAIC =   -1774.156

 CHI-SQUARE =      900.844 BASED ON     384 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS        921.522.

 FIT INDICES
 -----------
 BENTLER-BONETT     NORMED FIT INDEX =      .907
 BENTLER-BONETT NON-NORMED FIT INDEX =      .937
 COMPARATIVE FIT INDEX (CFI)         =      .944
 BOLLEN'S          (IFI) FIT INDEX   =      .944
 MCDONALD'S        (MFI) FIT INDEX   =      .515
 JORESKOG-SORBOM'S  GFI  FIT INDEX   =      .864
 JORESKOG-SORBOM'S AGFI  FIT INDEX   =      .835
 ROOT MEAN-SQUARE RESIDUAL (RMR)     =      .051
 STANDARDIZED RMR                    =      .046
 ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .059
 90% CONFIDENCE INTERVAL OF RMSEA  (        .054,          .064)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                    =      .678
 RELIABILITY COEFFICIENT RHO         =      .896

 STANDARDIZED FACTOR LOADINGS FOR THE FACTOR THAT GENERATES
 MAXIMAL RELIABILITY FOR THE UNIT-WEIGHT COMPOSITE
 BASED ON THE MODEL (RHO):
   PA1       NA1       PA2       NA2       NA3       NA4
    .214      .354      .231      .369      .352      .378
   PA3       PA4       PA5       NA5      SAT1      SAT2
    .241      .247      .251      .366      .249      .259
   SAT3    ANGER1    ANGER2    ANGE3     ANGER4    ANGER5
    .248      .386      .473      .505      .513      .488
   GHQ1      GHQ7      GHQ8      GHQ9    GHQ10     GHQ11
    .036      .045      .044      .422      .461      .413
 GHQ12     WELLB1    WELLB2    WELLB3    WELLB4    WELLB5
    .043      .257      .265      .254      .241      .242



 GOODNESS OF FIT SUMMARY FOR METHOD = ROBUST

 ROBUST INDEPENDENCE MODEL CHI-SQUARE =    8220.846 ON   435 DEGREES OF FREEDOM

 INDEPENDENCE AIC =    7350.846   INDEPENDENCE CAIC =    5190.572
        MODEL AIC =    -142.582          MODEL CAIC =   -2049.582

 SATORRA-BENTLER SCALED CHI-SQUARE =    625.4184 ON     384 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 FIT INDICES
 -----------
 BENTLER-BONETT     NORMED FIT INDEX =      .924
 BENTLER-BONETT NON-NORMED FIT INDEX =      .965
 COMPARATIVE FIT INDEX (CFI)         =      .969
 BOLLEN'S          (IFI) FIT INDEX   =      .969
 MCDONALD'S        (MFI) FIT INDEX   =      .734
 ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .040
 90% CONFIDENCE INTERVAL OF RMSEA  (        .034,          .046)


                       ITERATIVE SUMMARY

                   PARAMETER
 ITERATION         ABS CHANGE         ALPHA                FUNCTION
     1               .401043         1.00000               2.71578
     2               .035705         1.00000               2.32988
     3               .004237         1.00000               2.31720
```

```
    4              .001057        1.00000             2.31607
    5              .000409        1.00000             2.31579
```



```
 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)



  PA1   =V9  =     .616*F1    + 1.000 E9
                   .036
                 16.927@
             (    .035)
             (  17.646@

  NA1   =V10 =     .766*F2    + 1.000 E10
                   .051
                 15.138@
             (    .045)
             (  17.105@

  PA2   =V11 =     .638*F1    + 1.000 E11
                   .034
                 18.949@
             (    .037)
             (  17.154@

  NA2   =V12 =     .706*F2    + 1.000 E12
                   .044
                 16.009@
             (    .044)
             (  16.003@

  NA3   =V13 =     .833*F2    + 1.000 E13
                   .055
                 15.035@
             (    .045)
             (  18.470@

  NA4   =V14 =     .765*F2    + 1.000 E14
                   .046
                 16.545@
             (    .041)
             (  18.791@

  PA3   =V15 =     .677*F1    + 1.000 E15
                   .034
                 20.180@
             (    .035)
             (  19.161@

  PA4   =V16 =     .654*F1    + 1.000 E16
                   .031
                 21.047@
             (    .035)
             (  18.902@

  PA5   =V17 =     .702*F1    + 1.000 E17
                   .033
                 21.521@
             (    .033)
             (  21.149@

  NA5   =V18 =     .818*F2    + 1.000 E18
                   .052
                 15.838@
             (    .043)
             (  18.972@

  SAT1  =V44 =    1.250*F3    + 1.000 E44
                   .051
                 24.314@
             (    .059)
             (  21.369@

  SAT2  =V45 =    1.230*F3    + 1.000 E45
                   .047
                 26.027@
             (    .054)
             (  22.757@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)
```



```
 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SAT3  =V46 =    1.255*F3    + 1.000 E46
                   .052
                 24.145@
```

```
               (    .052)
               (  23.927@

ANGER1  =V55 =      .782*F4    +  1.000 E55
                    .052
                  14.980@
               (    .052)
               (  15.110@

ANGER2  =V56 =      .888*F4    +  1.000 E56
                    .044
                  19.993@
               (    .049)
               (  18.246@

ANGE3   =V57 =      .983*F4    +  1.000 E57
                    .044
                  22.248@
               (    .045)
               (  22.059@

ANGER4  =V58 =     1.032*F4    +  1.000 E58
                    .045
                  22.858@
               (    .045)
               (  22.717@

ANGER5  =V59 =      .924*F4    +  1.000 E59
                    .044
                  20.986@
               (    .053)
               (  17.335@

  GHQ1  =V61 =      .749*F5    +  1.000 E61
                    .051
                  14.630@
               (    .061)
               (  12.342@

  GHQ7  =V67 =      .981*F5    +  1.000 E67
                    .049
                  20.148@
               (    .045)
               (  21.578@

  GHQ8  =V68 =      .899*F5    +  1.000 E68
                    .047
                  19.223@
               (    .052)
               (  17.360@

  GHQ9  =V69 =      .909*F6    +  1.000 E69
                    .049
                  18.436@
               (    .047)
               (  19.338@

GHQ10   =V70 =      .952*F6    +  1.000 E70
                    .045
                  20.945@
               (    .041)
               (  23.108@

GHQ11   =V71 =      .910*F6    +  1.000 E71
                    .051
                  17.885@
               (    .054)
               (  16.878@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


17-May-07      PAGE : 11  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

GHQ12   =V72 =      .867*F5    +  1.000 E72
                    .047
                  18.416@
               (    .052)
               (  16.586@

WELLB1  =V73 =      .748*F7    +  1.000 E73
                    .033
                  22.741@
               (    .033)
               (  22.848@

WELLB2  =V74 =      .770*F7    +  1.000 E74
                    .032
                  24.025@
               (    .032)
               (  24.038@

WELLB3  =V75 =      .738*F7    +  1.000 E75
                    .033
                  22.234@
               (    .034)
```

```
              (  21.728@

WELLB4  =V76 =     .718*F7    +  1.000 E76
                   .035
                 20.439@
              (    .036)
              (  19.768@

WELLB5  =V77 =     .768*F7    +  1.000 E77
                   .037
                 20.644@
              (    .038)
              (  20.161@


17-May-07      PAGE : 12  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 V                                F
                ---                              ---
                              I F1  -   F1               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F2  -   F2               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F3  -   F3               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F4  -   F4               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F5  -   F5               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F6  -   F6               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F7  -   F7               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I

17-May-07      PAGE : 13  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 E                                D
                ---                              ---
E9  -  PA1                .298*I                               I
                          .024 I                               I
                        12.555@I                               I
                     (    .032)I                               I
                     (   9.304@I                               I
                               I                               I
E10 -  NA1                .575*I                               I
                          .050 I                               I
                        11.574@I                               I
                     (    .057)I                               I
                     (  10.022@I                               I
                               I                               I
E11 -  PA2                .216*I                               I
                          .018 I                               I
                        11.871@I                               I
                     (    .027)I                               I
                     (   8.118@I                               I
                               I                               I
E12 -  NA2                .410*I                               I
                          .037 I                               I
```

```
                      11.112@I                                  I
                   (    .044)I                                  I
                   (   9.293@I                                  I
                             I                                  I
E13 -  NA3              .695*I                                  I
                        .060 I                                  I
                      11.623@I                                  I
                   (    .072)I                                  I
                   (   9.647@I                                  I
                             I                                  I
E14 -  NA4              .432*I                                  I
                        .040 I                                  I
                      10.781@I                                  I
                   (    .047)I                                  I
                   (   9.113@I                                  I
                             I                                  I
E15 -  PA3              .188*I                                  I
                        .017 I                                  I
                      11.250@I                                  I
                   (    .024)I                                  I
                   (   7.704@I                                  I
                             I                                  I
E16 -  PA4              .144*I                                  I
                        .014 I                                  I
                      10.660@I                                  I
                   (    .019)I                                  I
                   (   7.492@I                                  I
                             I                                  I
E17 -  PA5              .149*I                                  I
                        .014 I                                  I
                      10.265@I                                  I
                   (    .017)I                                  I
                   (   8.532@I                                  I
                             I                                  I
E18 -  NA5              .570*I                                  I
                        .051 I                                  I
                      11.210@I                                  I
                   (    .066)I                                  I
                   (   8.565@I                                  I
                             I                                  I
E44 -  SAT1             .231*I                                  I
                        .023 I                                  I
                      10.023@I                                  I
                   (    .050)I                                  I
                   (   4.620@I                                  I
                             I                                  I
E45 -  SAT2             .097*I                                  I
                        .017 I                                  I
                       5.763@I                                  I
                   (    .031)I                                  I
                   (   3.183@I                                  I
                             I                                  I

17-May-07      PAGE : 14  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E46 -  SAT3             .247*I                                  I
                        .024 I                                  I
                      10.302@I                                  I
                   (    .044)I                                  I
                   (   5.656@I                                  I
                             I                                  I
E55 -ANGER1             .705*I                                  I
                        .054 I                                  I
                      13.156@I                                  I
                   (    .083)I                                  I
                   (   8.533@I                                  I
                             I                                  I
E56 -ANGER2             .343*I                                  I
                        .029 I                                  I
                      11.825@I                                  I
                   (    .048)I                                  I
                   (   7.160@I                                  I
                             I                                  I
E57 -ANGE3              .249*I                                  I
                        .024 I                                  I
                      10.314@I                                  I
                   (    .035)I                                  I
                   (   7.196@I                                  I
                             I                                  I
E58 -ANGER4             .233*I                                  I
                        .024 I                                  I
                       9.662@I                                  I
                   (    .035)I                                  I
                   (   6.645@I                                  I
                             I                                  I
E59 -ANGER5             .300*I                                  I
                        .027 I                                  I
                      11.294@I                                  I
                   (    .041)I                                  I
                   (   7.266@I                                  I
                             I                                  I
E61 -  GHQ1             .642*I                                  I
                        .052 I                                  I
                      12.391@I                                  I
                   (    .077)I                                  I
```

```
                     (   8.357@I                                 I
                              I                                 I
E67 -  GHQ7                .348*I                                 I
                           .039 I                                 I
                          8.862@I                                 I
                     (    .057)I                                 I
                     (   6.084@I                                 I
                              I                                 I
E68 -  GHQ8                .364*I                                 I
                           .037 I                                 I
                          9.847@I                                 I
                     (    .063)I                                 I
                     (   5.736@I                                 I
                              I                                 I
E69 -  GHQ9                .438*I                                 I
                           .042 I                                 I
                         10.367@I                                 I
                     (    .086)I                                 I
                     (   5.116@I                                 I
                              I                                 I
E70 -GHQ10                 .259*I                                 I
                           .035 I                                 I
                          7.476@I                                 I
                     (    .059)I                                 I
                     (   4.398@I                                 I
                              I                                 I
E71 -GHQ11                 .495*I                                 I
                           .046 I                                 I
                         10.805@I                                 I
                     (    .111)I                                 I
                     (   4.475@I                                 I
                              I                                 I
```

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17-May-07      PAGE : 15  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E72 -GHQ12                 .405*I                                 I
                           .038 I                                 I
                         10.546@I                                 I
                     (    .054)I                                 I
                     (   7.542@I                                 I
                              I                                 I
E73 -WELLB1                .132*I                                 I
                           .012 I                                 I
                         10.939@I                                 I
                     (    .023)I                                 I
                     (   5.808@I                                 I
                              I                                 I
E74 -WELLB2                .095*I                                 I
                           .010 I                                 I
                          9.516@I                                 I
                     (    .016)I                                 I
                     (   6.052@I                                 I
                              I                                 I
E75 -WELLB3                .146*I                                 I
                           .013 I                                 I
                         11.322@I                                 I
                     (    .023)I                                 I
                     (   6.333@I                                 I
                              I                                 I
E76 -WELLB4                .210*I                                 I
                           .017 I                                 I
                         12.231@I                                 I
                     (    .028)I                                 I
                     (   7.547@I                                 I
                              I                                 I
E77 -WELLB5                .229*I                                 I
                           .019 I                                 I
                         12.152@I                                 I
                     (    .035)I                                 I
                     (   6.494@I                                 I
                              I                                 I
```

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17-May-07      PAGE : 16  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

               V                                  F
              ---                                ---
                              I F2  -   F2              -.282*I
                              I F1  -   F1               .053 I
                              I                       -5.296@I
                              I                     (    .062)I
                              I                     (  -4.561@I
                              I                               I
                              I F3  -   F3               .230*I
                              I F1  -   F1               .051 I
                              I                        4.518@I
                              I                     (    .056)I
                              I                     (   4.086@I
```

```
I                                     I
I F4  -   F4                    -.352*I
I F1  -   F1                      .048 I
I                                -7.290@I
I                          (     .048)I
I                          (  -7.286@I
I                                     I
I F5  -   F5                    -.203*I
I F1  -   F1                      .054 I
I                                -3.767@I
I                          (     .062)I
I                          (  -3.285@I
I                                     I
I F6  -   F6                    -.281*I
I F1  -   F1                      .052 I
I                                -5.361@I
I                          (     .055)I
I                          (  -5.122@I
I                                     I
I F7  -   F7                      .718*I
I F1  -   F1                      .028 I
I                                25.520@I
I                          (     .033)I
I                          (  21.778@I
I                                     I
I F3  -   F3                      .075*I
I F2  -   F2                      .056 I
I                                 1.349 I
I                          (     .057)I
I                          (   1.313)I
I                                     I
I F4  -   F4                      .403*I
I F2  -   F2                      .049 I
I                                 8.294@I
I                          (     .048)I
I                          (   8.467@I
I                                     I
I F5  -   F5                    -.029*I
I F2  -   F2                      .058 I
I                                 -.500 I
I                          (     .066)I
I                          (    -.443)I
I                                     I
I F6  -   F6                      .327*I
I F2  -   F2                      .053 I
I                                 6.120@I
I                          (     .054)I
I                          (   6.029@I
I                                     I
I F7  -   F7                    -.355*I
I F2  -   F2                      .050 I
I                                -7.111@I
I                          (     .057)I
I                          (  -6.253@I
I                                     I
I F4  -   F4                    -.194*I
I F3  -   F3                      .051 I
I                                -3.782@I
I                          (     .053)I
I                          (  -3.637@I
I                                     I
```


MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)

```
---------------------------------------------------

I F5  -   F5                    -.459*I
I F3  -   F3                      .044 I
I                               -10.388@I
I                          (     .046)I
I                          ( -10.047@I
I                                     I
I F6  -   F6                    -.279*I
I F3  -   F3                      .051 I
I                                -5.446@I
I                          (     .049)I
I                          (  -5.656@I
I                                     I
I F7  -   F7                      .252*I
I F3  -   F3                      .050 I
I                                 5.064@I
I                          (     .055)I
I                          (   4.617@I
I                                     I
I F5  -   F5                      .025*I
I F4  -   F4                      .056 I
I                                  .456 I
I                          (     .052)I
I                          (     .489)I
I                                     I
I F6  -   F6                      .703*I
I F4  -   F4                      .031 I
I                                22.444@I
I                          (     .037)I
I                          (  19.154@I
I                                     I
I F7  -   F7                    -.301*I
```

```
                         I F4  -   F4              .049 I
                         I                       -6.108@I
                         I                     (   .050)I
                         I                     (  -6.037@I
                         I                              I
                         I F6  -   F6              .132*I
                         I F5  -   F5              .057 I
                         I                        2.319@I
                         I                     (   .061)I
                         I                     (   2.145@I
                         I                              I
                         I F7  -   F7             -.266*I
                         I F5  -   F5              .052 I
                         I                       -5.138@I
                         I                     (   .066)I
                         I                     (  -4.002@I
                         I                              I
                         I F7  -   F7             -.261*I
                         I F6  -   F6              .052 I
                         I                       -5.012@I
                         I                     (   .054)I
                         I                     (  -4.821@I
                         I                              I
```



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 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 STANDARDIZED SOLUTION:                                                R-SQUARED


  PA1    =V9  =   .748*F1    + .663 E9                                      .560
  NA1    =V10 =   .711*F2    + .704 E10                                     .505
  PA2    =V11 =   .808*F1    + .589 E11                                     .654


  NA2    =V12 =   .741*F2    + .672 E12                                     .549
  NA3    =V13 =   .707*F2    + .707 E13                                     .500
  NA4    =V14 =   .759*F2    + .652 E14                                     .575
  PA3    =V15 =   .842*F1    + .539 E15                                     .709
  PA4    =V16 =   .865*F1    + .502 E16                                     .748
  PA5    =V17 =   .877*F1    + .481 E17                                     .768
  NA5    =V18 =   .735*F2    + .678 E18                                     .540
  SAT1   =V44 =   .933*F3    + .359 E44                                     .871
  SAT2   =V45 =   .969*F3    + .246 E45                                     .940
  SAT3   =V46 =   .930*F3    + .368 E46                                     .864
ANGER1   =V55 =   .682*F4    + .732 E55                                     .465
ANGER2   =V56 =   .834*F4    + .551 E56                                     .696
ANGE3    =V57 =   .891*F4    + .453 E57                                     .795
ANGER4   =V58 =   .906*F4    + .424 E58                                     .821
ANGER5   =V59 =   .860*F4    + .510 E59                                     .740
  GHQ1   =V61 =   .683*F5    + .730 E61                                     .467
  GHQ7   =V67 =   .857*F5    + .515 E67                                     .734
  GHQ8   =V68 =   .830*F5    + .557 E68                                     .689
  GHQ9   =V69 =   .808*F6    + .589 E69                                     .653
GHQ10    =V70 =   .882*F6    + .471 E70                                     .778
GHQ11    =V71 =   .791*F6    + .612 E71                                     .626
GHQ12    =V72 =   .806*F5    + .592 E72                                     .650
WELLB1   =V73 =   .900*F7    + .436 E73                                     .810
WELLB2   =V74 =   .929*F7    + .371 E74                                     .863
WELLB3   =V75 =   .888*F7    + .460 E75                                     .788
WELLB4   =V76 =   .843*F7    + .538 E76                                     .711
WELLB5   =V77 =   .849*F7    + .529 E77                                     .720
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 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

                V                               F
               ---                             ---
                         I F2  -   F2             -.282*I
                         I F1  -   F1                   I
                         I                              I
                         I F3  -   F3              .230*I
                         I F1  -   F1                   I
                         I                              I
                         I F4  -   F4             -.352*I
                         I F1  -   F1                   I
                         I                              I
                         I F5  -   F5             -.203*I
                         I F1  -   F1                   I
                         I                              I
                         I F6  -   F6             -.281*I
                         I F1  -   F1                   I
                         I                              I
                         I F7  -   F7              .718*I
                         I F1  -   F1                   I
                         I                              I
                         I F3  -   F3              .075*I
                         I F2  -   F2                   I
                         I                              I
                         I F4  -   F4              .403*I
                         I F2  -   F2                   I
```

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                              I                               I
                              I F5  -   F5              -.029*I
                              I F2  -   F2                    I
                              I                               I
                              I F6  -   F6               .327*I
                              I F2  -   F2                    I
                              I                               I
                              I F7  -   F7              -.355*I
                              I F2  -   F2                    I
                              I                               I
                              I F4  -   F4              -.194*I
                              I F3  -   F3                    I
                              I                               I
                              I F5  -   F5              -.459*I
                              I F3  -   F3                    I
                              I                               I
                              I F6  -   F6              -.279*I
                              I F3  -   F3                    I
                              I                               I
                              I F7  -   F7               .252*I
                              I F3  -   F3                    I
                              I                               I
                              I F5  -   F5               .025*I
                              I F4  -   F4                    I
                              I                               I

17-May-07      PAGE : 20  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES (CONTINUED)
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                              I F6  -   F6               .703*I
                              I F4  -   F4                    I
                              I                               I
                              I F7  -   F7              -.301*I
                              I F4  -   F4                    I
                              I                               I
                              I F6  -   F6               .132*I
                              I F5  -   F5                    I
                              I                               I
                              I F7  -   F7              -.266*I
                              I F5  -   F5                    I
                              I                               I
                              I F7  -   F7              -.261*I
                              I F6  -   F6                    I
                              I                               I



-------------------------------------------------------------------------------
                          E N D   O F   M E T H O D
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17-May-07      PAGE : 21  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 WALD TEST (FOR DROPPING PARAMETERS)
 ROBUST INFORMATION MATRIX USED IN THIS WALD TEST
 MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS


        CUMULATIVE MULTIVARIATE STATISTICS              UNIVARIATE INCREMENT
        ----------------------------------              --------------------

 STEP  PARAMETER   CHI-SQUARE  D.F.  PROBABILITY       CHI-SQUARE  PROBABILITY
 ---- -----------  ----------  ----  -----------       ----------  -----------

   1     F5,F2         .196      1       .658              .196        .658
   2     F5,F4         .600      2       .741              .404        .525
   3     F3,F2        2.455      3       .483             1.855        .173

17-May-07      PAGE : 22  EQS     Licensee:
 TITLE:   MEASUREMENT dv MODEL: ALL SAMPLE

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 LAGRANGE MULTIPLIER TEST (FOR ADDING PARAMETERS)


 ORDERED UNIVARIATE TEST STATISTICS:
                                                     HANCOCK             STANDAR-
                                 CHI-                384 DF   PARAMETER   DIZED
  NO    CODE      PARAMETER     SQUARE      PROB.    PROB.     CHANGE     CHANGE
  --    ------    ---------     ------      -----  -------- ---------  --------
   1    2  12        V9,F7      22.410      .000     1.000      .220       .268
   2    2  12       V13,F6      20.843      .000     1.000     -.244      -.207
```

3	2	12	V16,F7	19.154	.000	1.000	-.158	-.209
4	2	12	V67,F3	17.541	.000	1.000	-.188	-.164
5	2	12	V13,F4	13.777	.000	1.000	-.200	-.170
6	2	12	V10,F4	11.520	.001	1.000	-.167	-.155
7	2	12	V55,F5	11.457	.001	1.000	-.158	-.137
8	2	12	V10,F5	11.334	.001	1.000	-.151	-.140
9	2	12	V76,F4	10.063	.002	1.000	-.086	-.101
10	2	12	V14,F4	9.860	.002	1.000	.140	.138
11	2	12	V14,F6	9.684	.002	1.000	.136	.135
12	2	12	V69,F3	9.293	.002	1.000	-.128	-.114
13	2	12	V68,F2	8.452	.004	1.000	-.114	-.105
14	2	12	V17,F4	7.252	.007	1.000	-.069	-.087
15	2	12	V12,F7	6.711	.010	1.000	-.106	-.111
16	2	12	V12,F6	6.635	.010	1.000	.108	.113
17	2	12	V11,F6	5.919	.015	1.000	.070	.088
18	2	12	V12,F4	5.820	.016	1.000	.103	.108
19	2	12	V14,F5	5.657	.017	1.000	.096	.095
20	2	12	V57,F1	5.589	.018	1.000	.079	.071
21	2	12	V13,F5	5.568	.018	1.000	-.116	-.099
22	2	12	V59,F5	5.567	.018	1.000	.078	.072
23	2	12	V18,F5	5.566	.018	1.000	.107	.096
24	2	12	V75,F6	5.500	.019	1.000	.056	.067
25	2	12	V11,F4	5.312	.021	1.000	.066	.084
26	2	12	V73,F3	5.079	.024	1.000	-.050	-.060
27	2	12	V46,F5	5.061	.024	1.000	-.079	-.059
28	2	12	V72,F3	4.952	.026	1.000	.098	.091
29	2	12	V55,F2	4.898	.027	1.000	.117	.102
30	2	12	V14,F3	4.766	.029	1.000	-.085	-.084
31	2	12	V69,F2	4.719	.030	1.000	.100	.089
32	2	12	V59,F1	4.619	.032	1.000	-.075	-.070
33	2	12	V70,F3	4.570	.033	1.000	.084	.078
34	2	12	V55,F3	4.231	.040	1.000	.094	.082
35	2	12	V9,F5	3.885	.049	1.000	-.063	-.076
36	2	12	V9,F2	3.833	.050	1.000	-.065	-.079
37	2	12	V76,F1	3.767	.052	1.000	.078	.091
38	2	12	V10,F6	3.693	.055	1.000	-.093	-.087
39	2	12	V75,F4	3.664	.056	1.000	.045	.054
40	2	12	V17,F6	3.395	.065	1.000	-.047	-.059
41	2	12	V10,F3	3.374	.066	1.000	.079	.074
42	2	12	V71,F2	3.372	.066	1.000	-.088	-.076
43	2	12	V59,F3	3.103	.078	1.000	-.057	-.053
44	2	12	V73,F2	3.073	.080	1.000	-.043	-.052
45	2	12	V74,F3	3.045	.081	1.000	.035	.042
46	2	12	V45,F7	2.909	.088	1.000	-.043	-.033
47	2	12	V56,F1	2.676	.102	1.000	-.059	-.056
48	2	12	V10,F1	2.671	.102	1.000	.076	.071
49	2	12	V68,F3	2.663	.103	1.000	.071	.065
50	2	12	V9,F6	2.570	.109	1.000	.052	.064
51	2	12	V16,F2	2.552	.110	1.000	.041	.054
52	2	12	V9,F4	2.517	.113	1.000	.052	.063
53	2	12	V57,F7	2.444	.118	1.000	.050	.045
54	2	12	V17,F5	2.285	.131	1.000	.038	.047
55	2	12	V72,F2	2.221	.136	1.000	.060	.055
56	2	12	V12,F1	2.178	.140	1.000	-.059	-.062
57	2	12	V74,F5	2.035	.154	1.000	-.030	-.036
58	2	12	V61,F4	2.020	.155	1.000	-.063	-.058
59	2	12	V45,F5	1.906	.167	1.000	.040	.032
60	2	12	V68,F7	1.854	.173	1.000	.053	.049
61	2	12	V76,F6	1.771	.183	1.000	-.037	-.043
62	2	12	V75,F5	1.712	.191	1.000	.031	.038
63	2	12	V73,F6	1.700	.192	1.000	-.030	-.036
64	2	12	V75,F2	1.639	.200	1.000	.032	.039
65	2	12	V14,F1	1.601	.206	1.000	-.053	-.053
66	2	12	V13,F7	1.558	.212	1.000	.065	.055
67	2	12	V70,F5	1.554	.213	1.000	-.049	-.045
68	2	12	V46,F7	1.536	.215	1.000	.038	.028
69	2	12	V77,F6	1.520	.218	1.000	.036	.039
70	2	12	V57,F6	1.461	.227	1.000	-.060	-.054
71	2	12	V77,F3	1.395	.238	1.000	.032	.036
72	2	12	V11,F3	1.290	.256	1.000	-.031	-.039
73	2	12	V59,F2	1.247	.264	1.000	-.042	-.039
74	2	12	V69,F5	1.204	.273	1.000	.046	.041
75	2	12	V55,F6	1.142	.285	1.000	.077	.067
76	2	12	V45,F1	1.110	.292	1.000	-.026	-.021
77	2	12	V10,F7	1.048	.306	1.000	.049	.045
78	2	12	V75,F3	.978	.323	1.000	-.023	-.027
79	2	12	V56,F2	.961	.327	1.000	-.038	-.036
80	2	12	V67,F2	.957	.328	1.000	.039	.034
81	2	12	V74,F4	.949	.330	1.000	.020	.024
82	2	12	V18,F4	.948	.330	1.000	.049	.044
83	2	12	V11,F7	.903	.342	1.000	.039	.050
84	2	12	V61,F3	.876	.349	1.000	.048	.043
85	2	12	V67,F1	.862	.353	1.000	.037	.032
86	2	12	V72,F4	.846	.358	1.000	.035	.033
87	2	12	V44,F1	.795	.372	1.000	.027	.020
88	2	12	V69,F1	.794	.373	1.000	-.038	-.034
89	2	12	V77,F2	.774	.379	1.000	.027	.030
90	2	12	V59,F7	.753	.386	1.000	-.029	-.027
91	2	12	V13,F3	.707	.400	1.000	.040	.034
92	2	12	V61,F6	.702	.402	1.000	-.039	-.035
93	2	12	V45,F4	.699	.403	1.000	.021	.016
94	2	12	V16,F6	.686	.407	1.000	-.021	-.027
95	2	12	V69,F7	.679	.410	1.000	-.035	-.031
96	2	12	V67,F4	.668	.414	1.000	.032	.028
97	2	12	V75,F1	.636	.425	1.000	-.028	-.033
98	2	12	V59,F6	.624	.430	1.000	.041	.038
99	2	12	V44,F7	.613	.434	1.000	.023	.017
100	2	12	V74,F6	.593	.441	1.000	-.016	-.020
101	2	12	V13,F1	.576	.448	1.000	.039	.033
102	2	12	V44,F6	.567	.451	1.000	.023	.017
103	2	12	V68,F4	.546	.460	1.000	-.028	-.026
104	2	12	V72,F7	.526	.468	1.000	-.029	-.027

105	2	12	V68,F1	.487	.485	1.000	-.027	-.025
106	2	12	V57,F2	.483	.487	1.000	.025	.023
107	2	12	V67,F6	.473	.492	1.000	.028	.024
108	2	12	V71,F3	.447	.504	1.000	.029	.025
109	2	12	V61,F2	.438	.508	1.000	.031	.028
110	2	12	V61,F1	.429	.512	1.000	-.030	-.027
111	2	12	V61,F7	.415	.519	1.000	-.030	-.027
112	2	12	V56,F6	.385	.535	1.000	.033	.031
113	2	12	V44,F4	.365	.546	1.000	-.018	-.013
114	2	12	V44,F5	.359	.549	1.000	.021	.015
115	2	12	V58,F1	.354	.552	1.000	.020	.017
116	2	12	V58,F6	.343	.558	1.000	-.029	-.026
117	2	12	V70,F1	.328	.567	1.000	.023	.021
118	2	12	V15,F3	.318	.573	1.000	.015	.018
119	2	12	V18,F1	.315	.575	1.000	.026	.024
120	2	12	V18,F7	.306	.580	1.000	.027	.024
121	2	12	V55,F1	.305	.581	1.000	.027	.024
122	2	12	V74,F1	.295	.587	1.000	-.017	-.020
123	2	12	V45,F6	.295	.587	1.000	-.014	-.011
124	2	12	V12,F5	.289	.591	1.000	.021	.022
125	2	12	V56,F7	.263	.608	1.000	-.018	-.017
126	2	12	V15,F6	.251	.616	1.000	-.014	-.017
127	2	12	V73,F5	.195	.658	1.000	.010	.012
128	2	12	V68,F6	.191	.662	1.000	-.017	-.016
129	2	12	V45,F2	.182	.669	1.000	-.011	-.009
130	2	12	V70,F7	.176	.674	1.000	.016	.015
131	2	12	V56,F3	.167	.683	1.000	.014	.013
132	2	12	V57,F3	.149	.699	1.000	.012	.011
133	2	12	V46,F4	.147	.701	1.000	-.012	-.009
134	2	12	V11,F5	.137	.711	1.000	.010	.013
135	2	12	V71,F7	.133	.715	1.000	.016	.014
136	2	12	V70,F2	.129	.719	1.000	-.015	-.014
137	2	12	V46,F1	.122	.727	1.000	.011	.008
138	2	12	V16,F3	.111	.739	1.000	.008	.010
139	2	12	V71,F5	.104	.747	1.000	.014	.012
140	2	12	V76,F3	.102	.750	1.000	.008	.010
141	2	12	V74,F2	.098	.754	1.000	-.007	-.008
142	2	12	V72,F6	.098	.754	1.000	.012	.012
143	2	12	V12,F3	.093	.760	1.000	-.011	-.012
144	2	12	V56,F5	.092	.761	1.000	-.010	-.010
145	2	12	V15,F5	.081	.776	1.000	-.008	-.010
146	2	12	V58,F7	.069	.792	1.000	-.008	-.007
147	2	12	V46,F2	.067	.796	1.000	.008	.006
148	2	12	V71,F1	.066	.797	1.000	.012	.010
149	2	12	V17,F3	.065	.799	1.000	.006	.008
150	2	12	V16,F4	.064	.800	1.000	-.006	-.008
151	2	12	V44,F2	.061	.804	1.000	.007	.006
152	2	12	V18,F6	.057	.812	1.000	.012	.011
153	2	12	V58,F3	.055	.815	1.000	-.007	-.006
154	2	12	V77,F4	.054	.816	1.000	-.007	-.007
155	2	12	V9,F3	.052	.819	1.000	-.007	-.009
156	2	12	V67,F7	.044	.834	1.000	-.008	-.007
157	2	12	V76,F2	.042	.837	1.000	.006	.007
158	2	12	V16,F5	.041	.839	1.000	-.005	-.007
159	2	12	V72,F1	.034	.853	1.000	.007	.007
160	2	12	V73,F4	.031	.860	1.000	-.004	-.005
161	2	12	V11,F2	.029	.864	1.000	-.005	-.006
162	2	12	V73,F1	.028	.868	1.000	-.006	-.007
163	2	12	V55,F7	.024	.878	1.000	-.007	-.006
164	2	12	V71,F4	.017	.897	1.000	.009	.008
165	2	12	V58,F5	.017	.897	1.000	-.004	-.004
166	2	12	V46,F6	.015	.904	1.000	-.004	-.003
167	2	12	V69,F4	.013	.910	1.000	-.008	-.007
168	2	12	V77,F5	.013	.910	1.000	-.003	-.004
169	2	12	V57,F5	.007	.934	1.000	.003	.002
170	2	12	V15,F7	.006	.936	1.000	.003	.004
171	2	12	V18,F3	.006	.939	1.000	.003	.003
172	2	12	V14,F7	.005	.942	1.000	-.003	-.003
173	2	12	V58,F2	.005	.945	1.000	-.002	-.002
174	2	12	V15,F2	.003	.954	1.000	-.002	-.002
175	2	12	V77,F1	.002	.961	1.000	-.002	-.002
176	2	12	V15,F4	.002	.962	1.000	-.001	-.002
177	2	12	V17,F7	.001	.978	1.000	.001	.001
178	2	12	V76,F5	.000	.985	1.000	.001	.001
179	2	12	V70,F4	.000	.989	1.000	-.001	-.001
180	2	12	V17,F2	.000	.997	1.000	.000	.000
181	2	0	F6,F6	.000	1.000	1.000	.000	.000
182	2	0	F7,F7	.000	1.000	1.000	.000	.000
183	2	0	F5,F5	.000	1.000	1.000	.000	.000
184	2	0	F4,F4	.000	1.000	1.000	.000	.000
185	2	0	F3,F3	.000	1.000	1.000	.000	.000
186	2	0	F2,F2	.000	1.000	1.000	.000	.000
187	2	0	F1,F1	.000	1.000	1.000	.000	.000

17-May-07 PAGE : 23 EQS Licensee:
TITLE: MEASUREMENT dv MODEL: ALL SAMPLE

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

MULTIVARIATE LAGRANGE MULTIPLIER TEST BY SIMULTANEOUS PROCESS IN STAGE 1

PARAMETER SETS (SUBMATRICES) ACTIVE AT THIS STAGE ARE:

PVV PFV PFF PDD GVV GVF GFV GFF BVF BFF

CUMULATIVE MULTIVARIATE STATISTICS ---------------------------------- UNIVARIATE INCREMENT ------------------------------
HANCOCK'S

							SEQUENTIAL	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROB.	CHI-SQUARE	PROB.	D.F.	PROB.
1	V9,F7	22.410	1	.000	22.410	.000	384	1.000
2	V13,F6	43.253	2	.000	20.843	.000	383	1.000
3	V67,F3	60.794	3	.000	17.541	.000	382	1.000
4	V10,F4	77.901	4	.000	17.107	.000	381	1.000
5	V16,F7	90.065	5	.000	12.164	.000	380	1.000
6	V55,F5	101.521	6	.000	11.457	.001	379	1.000
7	V10,F5	112.755	7	.000	11.234	.001	378	1.000
8	V76,F4	122.819	8	.000	10.063	.002	377	1.000
9	V68,F2	132.150	9	.000	9.331	.002	376	1.000
10	V69,F3	141.443	10	.000	9.293	.002	375	1.000
11	V69,F2	150.350	11	.000	8.907	.003	374	1.000
12	V17,F4	157.650	12	.000	7.300	.007	373	1.000
13	V57,F1	163.825	13	.000	6.175	.013	372	1.000
14	V13,F5	169.057	14	.000	5.233	.022	371	1.000
15	V46,F5	174.118	15	.000	5.061	.024	370	1.000
16	V73,F3	178.826	16	.000	4.708	.030	369	1.000
17	V75,F6	183.139	17	.000	4.313	.038	368	1.000
18	V55,F2	187.025	18	.000	3.886	.049	367	1.000

```
  LAGRANGIAN MULTIPLIER TEST REQUIRED   333556 WORDS OF MEMORY.
  PROGRAM ALLOCATES ******** WORDS.
1
  Execution begins at 15:58:48
  Execution ends   at 15:59:18
  Elapsed time =      30.00 seconds
```

Appendix 3.2 Cross-Validation Analysis of the Seven-Construct Wellbeing Measurement Model (baseline)

```
 EQS, A STRUCTURAL EQUATION PROGRAM          MULTIVARIATE SOFTWARE, INC.
 COPYRIGHT BY P.M. BENTLER                   VERSION 6.1 (C) 1985 - 2005 (B83).


   PROGRAM CONTROL INFORMATION

 /TITLE
 Measurement Model of Wellness (Sample 1)
 /SPECIFICATIONS
 DATA='leart1~1.ess';
 VARIABLES=99; CASES=204; GROUP=2;
 METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
 /LABELS
 V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
 V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
 V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
 V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
 V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
 V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
 V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
 V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
 V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
 V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
 V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
 V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
 V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
 V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
 V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
 V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
 V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
 V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
 V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
 V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
 /EQUATIONS
 V9 =   *F1 + E9;
 V10 =   *F2 + E10;
 V11 =   *F1 + E11;
```

```
V12 =   *F2 + E12;
V13 =   *F2 + E13;
V14 =   *F2 + E14;
V15 =   *F1 + E15;
V16 =   *F1 + E16;
V17 =   *F1 + E17;
V18 =   *F2 + E18;
V44 =   *F7 + E44;
V45 =   *F7 + E45;
V46 =   *F7 + E46;
V55 =   *F3 + E55;
V56 =   *F3 + E56;
V57 =   *F3 + E57;
V58 =   *F3 + E58;
V59 =   *F3 + E59;
V61 =   *F4 + E61;
V67 =   *F4 + E67;
V68 =   *F4 + E68;
V69 =   *F5 + E69;
V70 =   *F5 + E70;
V71 =   *F5 + E71;


18-Jan-07      PAGE :  2  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

V72 =   *F4 + E72;
V73 =   *F6 + E73;
V74 =   *F6 + E74;
V75 =   *F6 + E75;
V76 =   *F6 + E76;
V77 =   *F6 + E77;
/VARIANCES
 F1 = 1;
 F2 = 1;
 F3 = 1;
 F4 = 1;
 F5 = 1;
 F6 = 1;
 F7 = 1;
 E9 = *;
 E10 = *;
 E11 = *;
 E12 = *;
 E13 = *;
 E14 = *;
 E15 = *;
 E16 = *;
 E17 = *;
 E18 = *;
 E44 = *;
 E45 = *;
 E46 = *;
 E55 = *;
 E56 = *;
 E57 = *;
 E58 = *;
 E59 = *;
 E61 = *;
 E67 = *;
 E68 = *;
 E69 = *;
 E70 = *;
 E71 = *;
 E72 = *;
 E73 = *;
 E74 = *;
 E75 = *;
 E76 = *;
 E77 = *;
/COVARIANCES
F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;


18-Jan-07      PAGE :  3  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

F3,F6 = *;
F4,F6 = *;
F5,F6 = *;
F1,F7 = *;
F2,F7 = *;
F3,F7 = *;
F4,F7 = *;
F5,F7 = *;
F6,F7 = *;
/PRINT
```

```
FIT=ALL;
TABLE=EQUATION;
/END


    122 CUMULATED RECORDS OF INPUT MODEL FILE WERE READ (GROUP   1)


18-Jan-07      PAGE :  4  EQS     Licensee:
 TITLE:

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2



   PROGRAM CONTROL INFORMATION


/TITLE
Measurement Model of Wellness (Sample 2)
/SPECIFICATIONS
DATA='leartl~2.ess';
VARIABLES=99; CASES=204;
METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
/LABELS
V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
/EQUATIONS
V9 =   *F1 + E9;
V10 =   *F2 + E10;
V11 =   *F1 + E11;
V12 =   *F2 + E12;
V13 =   *F2 + E13;
V14 =   *F2 + E14;
V15 =   *F1 + E15;
V16 =   *F1 + E16;
V17 =   *F1 + E17;
V18 =   *F2 + E18;
V44 =   *F7 + E44;
V45 =   *F7 + E45;
V46 =   *F7 + E46;
V55 =   *F3 + E55;
V56 =   *F3 + E56;
V57 =   *F3 + E57;
V58 =   *F3 + E58;
V59 =   *F3 + E59;
V61 =   *F4 + E61;
V67 =   *F4 + E67;
V68 =   *F4 + E68;
V69 =   *F5 + E69;
V70 =   *F5 + E70;
V71 =   *F5 + E71;
V72 =   *F4 + E72;
V73 =   *F6 + E73;
V74 =   *F6 + E74;
V75 =   *F6 + E75;
V76 =   *F6 + E76;
V77 =   *F6 + E77;
/VARIANCES


18-Jan-07      PAGE :  5  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 F1 = 1;
 F2 = 1;
 F3 = 1;
 F4 = 1;
 F5 = 1;
 F6 = 1;
 F7 = 1;
 E9 = *;
 E10 = *;
 E11 = *;
 E12 = *;
 E13 = *;
 E14 = *;
 E15 = *;
 E16 = *;
 E17 = *;
 E18 = *;
 E44 = *;
```

```
E45 = *;
E46 = *;
E55 = *;
E56 = *;
E57 = *;
E58 = *;
E59 = *;
E61 = *;
E67 = *;
E68 = *;
E69 = *;
E70 = *;
E71 = *;
E72 = *;
E73 = *;
E74 = *;
E75 = *;
E76 = *;
E77 = *;
/COVARIANCES
F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;
F3,F6 = *;
F4,F6 = *;
F5,F6 = *;
F1,F7 = *;
F2,F7 = *;
F3,F7 = *;
F4,F7 = *;


18-Jan-07      PAGE :  6  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

F5,F7 = *;
F6,F7 = *;
/PRINT
FIT=ALL;
TABLE=EQUATION;
/LMTEST
PROCESS=SIMULTANEOUS;
SET=PVV,PFV,PFF,PDD,GVV,GVF,GFV,GFF,
BVF,BFF;
/WTEST
PVAL=0.05;
PRIORITY=ZERO;
/END


     252 CUMULATED RECORDS OF INPUT MODEL FILE WERE READ (GROUP   2)

*** NOTE THAT THE PRINT     SECTION ABOVE WILL OVERRIDE
    THE PRINT     SECTION IN A PREVIOUS GROUP.


   DATA IS READ FROM leart1~1.ess
   THERE ARE  99 VARIABLES AND   204 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING *** THESE CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
     9    56    62    82    87    90    99   192


18-Jan-07      PAGE :  7  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1


 SAMPLE STATISTICS BASED ON COMPLETE CASES


                          UNIVARIATE STATISTICS
                          ---------------------


  VARIABLE           PA1        NA1        PA2        NA2        NA3

  MEAN              3.7908     2.6173     3.7449     2.4847     2.5102

  SKEWNESS (G1)     -.1068      .1408     -.5615      .2717      .2060

  KURTOSIS (G2)     -.3858     -.6513      .4863     -.1856    -1.0136

  STANDARD DEV.      .8178     1.0629      .8204      .9580     1.1875


  VARIABLE           NA4        PA3        PA4        PA5        NA5

  MEAN              2.2959     3.9133     3.9490     3.8010     2.3724
```

SKEWNESS (G1)	.3855	-.6822	-.8044	-.6101	.4730
KURTOSIS (G2)	-.3651	.5241	.8777	.3889	-.5002
STANDARD DEV.	.9944	.8519	.8022	.8511	1.1228

VARIABLE	SAT1	SAT2	SAT3	ANGER1	ANGER2
MEAN	5.1327	5.1378	5.0561	2.2602	1.9847
SKEWNESS (G1)	-.8118	-.6902	-.7535	.8505	.9136
KURTOSIS (G2)	.6011	.2600	.0973	.3191	.0597
STANDARD DEV.	1.3176	1.2756	1.3670	1.1585	1.0693

VARIABLE	ANGE3	ANGER4	ANGER5	GHQ1	GHQ7
MEAN	2.0816	2.0867	1.8265	3.1531	3.2245
SKEWNESS (G1)	.9388	.8455	1.1584	.3547	.2285
KURTOSIS (G2)	.3215	-.1895	.4503	.2395	-.0274
STANDARD DEV.	1.0638	1.1175	1.0576	1.0799	1.1594

VARIABLE	GHQ8	GHQ9	GHQ10	GHQ11	GHQ12
MEAN	3.0612	2.5102	2.4592	2.1990	3.2653
SKEWNESS (G1)	.1449	.4972	.2646	.8350	.2289
KURTOSIS (G2)	-.0162	-.3787	-.8717	.4610	.0668
STANDARD DEV.	1.1169	1.1613	1.1247	1.1260	1.0865

VARIABLE	WELLB1	WELLB2	WELLB3	WELLB4	WELLB5
MEAN	3.7194	3.7704	3.7347	3.8214	3.7653
SKEWNESS (G1)	-.3569	-.3645	-.3379	-.3553	-.5227
KURTOSIS (G2)	.2734	.0173	-.0995	-.3806	.0134
STANDARD DEV.	.8151	.8123	.8296	.8313	.8921

MULTIVARIATE KURTOSIS

MARDIA'S COEFFICIENT (G2,P) = 269.5042
NORMALIZED ESTIMATE = 43.0539

ELLIPTICAL THEORY KURTOSIS ESTIMATES

MARDIA-BASED KAPPA = .2807 MEAN SCALED UNIVARIATE KURTOSIS = .0044

MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA= .2807

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	53	66	84	105	176
ESTIMATE	1134.4507	933.1427	1235.5015	910.6827	924.8776

18-Jan-07 PAGE : 8 EQS Licensee:
TITLE: Measurement Model of Wellness (Sample 1)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

COVARIANCE MATRIX TO BE ANALYZED: 30 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 196 CASES.

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.669				
NA1	V 10	-.106	1.130			
PA2	V 11	.464	-.026	.673		
NA2	V 12	-.155	.515	-.101	.918	
NA3	V 13	-.118	.735	-.064	.418	1.410
NA4	V 14	-.194	.529	-.134	.538	.587
PA3	V 15	.469	-.064	.511	-.106	-.094
PA4	V 16	.430	-.050	.469	-.078	-.102
PA5	V 17	.476	-.087	.508	-.093	-.103
NA5	V 18	-.163	.579	-.135	.608	.630
SAT1	V 44	.146	.333	.116	.130	.178
SAT2	V 45	.132	.273	.138	.097	.186
SAT3	V 46	.196	.268	.199	.147	.202
ANGER1	V 55	-.197	.259	-.174	.386	.231
ANGER2	V 56	-.270	.107	-.235	.320	.054
ANGE3	V 57	-.239	.144	-.215	.350	.091

ANGER4	V 58	-.238	.141	-.203	.419	.125
ANGER5	V 59	-.211	.144	-.219	.300	.109
GHQ1	V 61	-.193	-.182	-.192	-.069	-.104
GHQ7	V 67	-.148	-.119	-.101	-.012	-.125
GHQ8	V 68	-.203	-.223	-.143	-.081	-.288
GHQ9	V 69	-.144	.130	-.182	.341	.031
GHQ10	V 70	-.180	.100	-.164	.315	.000
GHQ11	V 71	-.148	.077	-.123	.252	-.164
GHQ12	V 72	-.170	-.139	-.101	-.057	-.080
WELLB1	V 73	.423	-.144	.420	-.212	-.189
WELLB2	V 74	.429	-.140	.423	-.227	-.169
WELLB3	V 75	.390	-.133	.409	-.204	-.151
WELLB4	V 76	.393	-.130	.375	-.185	-.098
WELLB5	V 77	.366	-.116	.381	-.178	-.131

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	.989				
PA3	V 15	-.169	.726			
PA4	V 16	-.118	.539	.644		
PA5	V 17	-.187	.567	.539	.724	
NA5	V 18	.628	-.162	-.073	-.110	1.261
SAT1	V 44	-.045	.242	.166	.221	.094
SAT2	V 45	-.026	.248	.202	.192	.056
SAT3	V 46	-.068	.266	.187	.211	.066
ANGER1	V 55	.328	-.213	-.207	-.251	.390
ANGER2	V 56	.307	-.309	-.252	-.321	.272
ANGE3	V 57	.396	-.275	-.206	-.271	.359
ANGER4	V 58	.359	-.321	-.237	-.321	.357
ANGER5	V 59	.334	-.297	-.229	-.317	.368
GHQ1	V 61	.031	-.166	-.161	-.108	-.001
GHQ7	V 67	.010	-.119	-.096	-.094	.111
GHQ8	V 68	.023	-.143	-.171	-.131	-.100
GHQ9	V 69	.387	-.258	-.184	-.242	.286
GHQ10	V 70	.310	-.247	-.207	-.226	.233
GHQ11	V 71	.177	-.239	-.195	-.222	.167
GHQ12	V 72	.172	-.120	-.094	-.137	.116
WELLB1	V 73	-.152	.386	.355	.411	-.259
WELLB2	V 74	-.183	.400	.337	.426	-.211
WELLB3	V 75	-.193	.372	.304	.414	-.203
WELLB4	V 76	-.167	.364	.329	.451	-.154
WELLB5	V 77	-.151	.380	.326	.450	-.184

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	1.736				
SAT2	V 45	1.541	1.627			
SAT3	V 46	1.531	1.551	1.869		
ANGER1	V 55	-.112	-.103	-.122	1.342	
ANGER2	V 56	-.213	-.188	-.235	.727	1.143
ANGE3	V 57	-.293	-.237	-.312	.753	.801
ANGER4	V 58	-.242	-.248	-.215	.772	.878
ANGER5	V 59	-.264	-.222	-.241	.640	.813
GHQ1	V 61	-.231	-.278	-.362	-.117	-.044
GHQ7	V 67	-.589	-.575	-.638	.028	.019
GHQ8	V 68	-.439	-.408	-.475	-.047	.052
GHQ9	V 69	-.360	-.409	-.449	.626	.546
GHQ10	V 70	-.225	-.289	-.293	.572	.694
GHQ11	V 71	-.309	-.366	-.339	.522	.490
GHQ12	V 72	-.348	-.385	-.466	-.049	-.001
WELLB1	V 73	.094	.080	.139	-.275	-.245
WELLB2	V 74	.128	.124	.167	-.268	-.245
WELLB3	V 75	.158	.124	.143	-.218	-.214
WELLB4	V 76	.121	.107	.143	-.235	-.346
WELLB5	V 77	.236	.222	.244	-.226	-.275

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	1.132				
ANGER4	V 58	.988	1.249			
ANGER5	V 59	.866	.887	1.118		
GHQ1	V 61	-.018	-.024	.011	1.166	
GHQ7	V 67	.110	.062	.101	.586	1.344
GHQ8	V 68	.103	.056	.113	.709	.873
GHQ9	V 69	.584	.643	.586	.014	.264
GHQ10	V 70	.701	.734	.711	.078	.148
GHQ11	V 71	.635	.629	.624	.108	.165
GHQ12	V 72	.035	.003	.123	.646	.843
WELLB1	V 73	-.233	-.252	-.223	-.131	-.188
WELLB2	V 74	-.248	-.252	-.240	-.113	-.179
WELLB3	V 75	-.173	-.182	-.226	-.113	-.191
WELLB4	V 76	-.314	-.313	-.318	-.060	-.149
WELLB5	V 77	-.232	-.292	-.251	-.102	-.234

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	1.248				
GHQ9	V 69	.092	1.349			
GHQ10	V 70	.213	.872	1.265		
GHQ11	V 71	.260	.785	.872	1.268	
GHQ12	V 72	.789	.208	.134	.101	1.181
WELLB1	V 73	-.101	-.220	-.168	-.159	-.156
WELLB2	V 74	-.124	-.200	-.186	-.185	-.149
WELLB3	V 75	-.138	-.115	-.103	-.111	-.165
WELLB4	V 76	-.158	-.114	-.225	-.231	-.101
WELLB5	V 77	-.211	-.121	-.169	-.199	-.178

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.664				
WELLB2	V 74	.597	.660			
WELLB3	V 75	.489	.523	.688		
WELLB4	V 76	.447	.487	.516	.691	
WELLB5	V 77	.483	.525	.594	.594	.796

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BENTLER-WEEKS STRUCTURAL REPRESENTATION:

      NUMBER OF DEPENDENT VARIABLES = 30
          DEPENDENT V'S :     9   10   11   12   13   14   15   16   17   18
          DEPENDENT V'S :    44   45   46   55   56   57   58   59   61   67
          DEPENDENT V'S :    68   69   70   71   72   73   74   75   76   77

      NUMBER OF INDEPENDENT VARIABLES = 37
          INDEPENDENT F'S :     1    2    3    4    5    6    7
          INDEPENDENT E'S :     9   10   11   12   13   14   15   16   17   18
          INDEPENDENT E'S :    44   45   46   55   56   57   58   59   61   67
          INDEPENDENT E'S :    68   69   70   71   72   73   74   75   76   77

      NUMBER OF FREE PARAMETERS =  81
      NUMBER OF FIXED NONZERO PARAMETERS =  37


   DATA IS READ FROM leartl~2.ess
   THERE ARE  99 VARIABLES AND   204 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING *** THESE CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
    12    43    55    96   119   126   140   143   161   163
```


TITLE: Measurement Model of Wellness (Sample 2)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

SAMPLE STATISTICS BASED ON COMPLETE CASES

UNIVARIATE STATISTICS

VARIABLE	PA1	NA1	PA2	NA2	NA3
MEAN	3.7474	2.6649	3.7835	2.4794	2.5876
SKEWNESS (G1)	-.1038	-.0210	-.1192	.1862	.1274
KURTOSIS (G2)	-.3755	-.7658	-.4177	-.4414	-.9363
STANDARD DEV.	.8290	1.0945	.7581	.9506	1.1718

VARIABLE	NA4	PA3	PA4	PA5	NA5
MEAN	2.4691	3.9227	3.9845	3.8557	2.4278
SKEWNESS (G1)	.1724	-.3077	-.2408	-.2815	.3683
KURTOSIS (G2)	-.7406	-.2473	-.2790	-.1814	-.5710
STANDARD DEV.	1.0188	.7544	.7088	.7479	1.1046

VARIABLE	SAT1	SAT2	SAT3	ANGER1	ANGER2
MEAN	5.1392	5.2320	5.2371	2.3454	2.0258
SKEWNESS (G1)	-.6945	-.7661	-.7191	.5647	.9430
KURTOSIS (G2)	.2202	.7725	.1695	-.4201	.2744
STANDARD DEV.	1.3643	1.2644	1.3294	1.1378	1.0600

VARIABLE	ANGE3	ANGER4	ANGER5	GHQ1	GHQ7
MEAN	2.1546	2.1495	1.8660	3.1959	3.1907
SKEWNESS (G1)	.8062	1.0573	1.1746	.5271	.2204
KURTOSIS (G2)	.0003	.6745	.5316	.5326	-.2435
STANDARD DEV.	1.1412	1.1622	1.0929	1.1164	1.1334

VARIABLE	GHQ8	GHQ9	GHQ10	GHQ11	GHQ12
MEAN	3.2113	2.6237	2.5206	2.3660	3.2474
SKEWNESS (G1)	.4740	.3498	.3251	.5570	.3910
KURTOSIS (G2)	.2208	-.4985	-.4098	-.3428	.4580
STANDARD DEV.	1.0439	1.0858	1.0342	1.1718	1.0680

VARIABLE	WELLB1	WELLB2	WELLB3	WELLB4	WELLB5
MEAN	3.7165	3.7835	3.7010	3.7629	3.6959
SKEWNESS (G1)	-.3386	-.3898	-.5173	-.3652	-.5270
KURTOSIS (G2)	.0460	.1051	.5608	-.0644	.1888
STANDARD DEV.	.8499	.8484	.8353	.8730	.9192

MULTIVARIATE KURTOSIS

MARDIA'S COEFFICIENT (G2,P) = 240.4228
NORMALIZED ESTIMATE = 38.2117

ELLIPTICAL THEORY KURTOSIS ESTIMATES

MARDIA-BASED KAPPA = .2504 MEAN SCALED UNIVARIATE KURTOSIS = -.0242

MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA= .2504

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	34	60	63	91	181
ESTIMATE	1127.1053	1020.5342	1091.7307	883.7402	766.8847

18-Jan-07 PAGE : 10 EQS Licensee:
TITLE: Measurement Model of Wellness (Sample 2)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

COVARIANCE MATRIX TO BE ANALYZED: 30 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 194 CASES.

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.687				
NA1	V 10	-.168	1.198			
PA2	V 11	.396	-.187	.575		
NA2	V 12	-.241	.509	-.207	.904	
NA3	V 13	-.234	.887	-.209	.634	1.373
NA4	V 14	-.202	.536	-.219	.608	.650
PA3	V 15	.359	-.150	.341	-.237	-.167
PA4	V 16	.322	-.109	.354	-.200	-.136
PA5	V 17	.362	-.163	.378	-.200	-.220
NA5	V 18	-.145	.641	-.140	.555	.721
SAT1	V 44	.258	.042	.206	-.015	-.015
SAT2	V 45	.168	-.020	.144	.007	.039
SAT3	V 46	.174	.044	.145	-.016	.083
ANGER1	V 55	-.016	.267	-.049	.331	.335
ANGER2	V 56	-.102	.226	-.119	.257	.270
ANGE3	V 57	-.090	.275	-.096	.366	.313
ANGER4	V 58	-.123	.242	-.149	.291	.300
ANGER5	V 59	-.117	.147	-.174	.287	.240
GHQ1	V 61	-.199	-.027	-.040	.097	.149
GHQ7	V 67	-.112	-.091	-.119	.058	-.030
GHQ8	V 68	-.154	-.183	-.099	-.003	-.171
GHQ9	V 69	-.121	.283	-.113	.306	.284
GHQ10	V 70	-.039	.274	-.073	.272	.200
GHQ11	V 71	-.104	.232	-.060	.176	.167
GHQ12	V 72	-.150	-.077	-.086	.041	-.094
WELLB1	V 73	.384	-.251	.291	-.330	-.257
WELLB2	V 74	.396	-.218	.305	-.274	-.224
WELLB3	V 75	.370	-.220	.308	-.229	-.171
WELLB4	V 76	.411	-.230	.296	-.259	-.249
WELLB5	V 77	.379	-.242	.333	-.309	-.214

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	1.038				
PA3	V 15	-.160	.569			
PA4	V 16	-.184	.382	.502		
PA5	V 17	-.160	.362	.412	.559	
NA5	V 18	.648	-.153	-.159	-.187	1.220
SAT1	V 44	.028	.177	.241	.238	.116
SAT2	V 45	.015	.158	.180	.199	.076
SAT3	V 46	.013	.164	.190	.195	.110
ANGER1	V 55	.278	-.149	-.124	-.193	.271
ANGER2	V 56	.340	-.195	-.233	-.250	.300
ANGE3	V 57	.393	-.118	-.174	-.221	.405
ANGER4	V 58	.468	-.139	-.231	-.268	.392
ANGER5	V 59	.369	-.228	-.292	-.304	.275
GHQ1	V 61	.063	-.094	-.064	-.065	.071
GHQ7	V 67	.045	-.141	-.127	-.117	.105
GHQ8	V 68	-.027	-.165	-.142	-.078	.054
GHQ9	V 69	.379	-.133	-.203	-.205	.276
GHQ10	V 70	.293	-.141	-.163	-.178	.232
GHQ11	V 71	.289	-.091	-.170	-.211	.335
GHQ12	V 72	.065	-.074	-.126	-.094	.096
WELLB1	V 73	-.260	.351	.291	.311	-.210
WELLB2	V 74	-.287	.356	.302	.331	-.207

WELLB3	V 75	-.175	.324	.296	.325	-.162
WELLB4	V 76	-.189	.349	.302	.375	-.224
WELLB5	V 77	-.204	.375	.322	.355	-.206

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	1.861				
SAT2	V 45	1.548	1.599			
SAT3	V 46	1.604	1.535	1.767		
ANGER1	V 55	-.064	-.065	-.077	1.295	
ANGER2	V 56	-.185	-.208	-.187	.836	1.124
ANGE3	V 57	-.198	-.181	-.213	.817	.856
ANGER4	V 58	-.311	-.247	-.305	.720	.908
ANGER5	V 59	-.344	-.306	-.326	.751	.941
GHQ1	V 61	-.530	-.476	-.508	-.213	.000
GHQ7	V 67	-.757	-.723	-.792	-.191	.042
GHQ8	V 68	-.506	-.495	-.553	-.239	-.062
GHQ9	V 69	-.486	-.420	-.449	.514	.606
GHQ10	V 70	-.280	-.303	-.290	.514	.562
GHQ11	V 71	-.253	-.241	-.222	.536	.607
GHQ12	V 72	-.439	-.446	-.510	-.169	.051
WELLB1	V 73	.309	.268	.296	-.145	-.184
WELLB2	V 74	.414	.392	.419	-.091	-.155
WELLB3	V 75	.322	.261	.315	-.114	-.143
WELLB4	V 76	.391	.325	.373	-.135	-.186
WELLB5	V 77	.348	.289	.368	-.112	-.153

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	1.302				
ANGER4	V 58	1.132	1.351			
ANGER5	V 59	.912	1.005	1.194		
GHQ1	V 61	-.077	-.050	-.010	1.246	
GHQ7	V 67	-.014	.028	.078	.828	1.285
GHQ8	V 68	-.100	-.063	.018	.679	.892
GHQ9	V 69	.618	.658	.587	.100	.191
GHQ10	V 70	.562	.626	.562	.027	.061
GHQ11	V 71	.632	.686	.604	.089	-.003
GHQ12	V 72	.091	.087	.096	.697	.864
WELLB1	V 73	-.174	-.211	-.199	-.250	-.205
WELLB2	V 74	-.132	-.211	-.190	-.279	-.264
WELLB3	V 75	-.130	-.219	-.175	-.169	-.150
WELLB4	V 76	-.217	-.280	-.244	-.233	-.245
WELLB5	V 77	-.186	-.229	-.217	-.147	-.185

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	1.090				
GHQ9	V 69	-.019	1.179			
GHQ10	V 70	-.012	.855	1.070		
GHQ11	V 71	.078	.838	.881	1.373	
GHQ12	V 72	.782	.104	.042	.132	1.141
WELLB1	V 73	-.152	-.237	-.240	-.212	-.230
WELLB2	V 74	-.223	-.237	-.208	-.185	-.262
WELLB3	V 75	-.113	-.201	-.186	-.123	-.190
WELLB4	V 76	-.162	-.235	-.161	-.203	-.231
WELLB5	V 77	-.143	-.182	-.147	-.095	-.204

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.722				
WELLB2	V 74	.633	.720			
WELLB3	V 75	.594	.593	.698		
WELLB4	V 76	.565	.596	.571	.762	
WELLB5	V 77	.602	.602	.634	.627	.845

BENTLER-WEEKS STRUCTURAL REPRESENTATION:

NUMBER OF DEPENDENT VARIABLES = 30

DEPENDENT V'S :	9	10	11	12	13	14	15	16	17	18
DEPENDENT V'S :	44	45	46	55	56	57	58	59	61	67
DEPENDENT V'S :	68	69	70	71	72	73	74	75	76	77

NUMBER OF INDEPENDENT VARIABLES = 37

INDEPENDENT F'S :	1	2	3	4	5	6	7			
INDEPENDENT E'S :	9	10	11	12	13	14	15	16	17	18
INDEPENDENT E'S :	44	45	46	55	56	57	58	59	61	67
INDEPENDENT E'S :	68	69	70	71	72	73	74	75	76	77

NUMBER OF FREE PARAMETERS = 81

NUMBER OF FIXED NONZERO PARAMETERS = 37

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO INDEPENDENCE MODEL.
CALCULATIONS FOR USER'S MODEL NOW BEGIN.

3RD STAGE OF COMPUTATION REQUIRED 3113587 WORDS OF MEMORY.
PROGRAM ALLOCATED 200000000 WORDS

DETERMINANT OF INPUT MATRIX IN GROUP 1 IS .17349D-10

DETERMINANT OF INPUT MATRIX IN GROUP 2 IS .20252D-11

*** NOTE *** RESIDUAL-BASED STATISTICS CANNOT BE
CALCULATED BECAUSE OF PIVOTING PROBLEMS.

TITLE: Measurement Model of Wellness (Sample 1)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

RELIABILITY COEFFICIENTS

CRONBACH'S ALPHA = .669
COEFFICIENT ALPHA FOR AN OPTIMAL SHORT SCALE = .916
BASED ON THE FOLLOWING 8 VARIABLES
ANGER1 ANGER2 ANGE3 ANGER4 ANGER5 GHQ9
GHQ10 GHQ11
RELIABILITY COEFFICIENT RHO = .890
GREATEST LOWER BOUND RELIABILITY = .949
GLB RELIABILITY FOR AN OPTIMAL SHORT SCALE = .952
BASED ON 29 VARIABLES, ALL EXCEPT:
GHQ1
BENTLER'S DIMENSION-FREE LOWER BOUND RELIABILITY = .949
SHAPIRO'S LOWER BOUND RELIABILITY FOR A WEIGHTED COMPOSITE = .989
WEIGHTS THAT ACHIEVE SHAPIRO'S LOWER BOUND:

PA1	NA1	PA2	NA2	NA3	NA4
-.183	.032	-.187	.084	.043	.101
PA3	PA4	PA5	NA5	SAT1	SAT2
-.212	-.207	-.221	.102	-.286	-.295
SAT3	ANGER1	ANGER2	ANGE3	ANGER4	ANGER5
-.269	.138	.164	.199	.218	.183
GHQ1	GHQ7	GHQ8	GHQ9	GHQ10	GHQ11
.073	.132	.112	.148	.139	.144
GHQ12	WELLB1	WELLB2	WELLB3	WELLB4	WELLB5
.114	-.243	-.246	-.194	-.197	-.224

PARAMETER ESTIMATES APPEAR IN ORDER,
NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.

RESIDUAL COVARIANCE MATRIX (S-SIGMA) :

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.000				
NA1	V 10	-.006	.000			
PA2	V 11	.023	.081	.000		
NA2	V 12	-.059	-.012	.001	.000	
NA3	V 13	-.017	.176	.045	-.114	.000
NA4	V 14	-.093	-.027	-.026	.008	.024
PA3	V 15	-.012	.053	-.003	.005	.025
PA4	V 16	-.015	.058	-.006	.025	.008
PA5	V 17	-.012	.032	-.013	.020	.017
NA5	V 18	-.050	-.039	-.015	.020	.004
SAT1	V 44	-.026	.229	-.067	.031	.073
SAT2	V 45	-.042	.168	-.048	-.003	.079
SAT3	V 46	.023	.163	.014	.047	.096
ANGER1	V 55	-.002	.025	.033	.163	-.006
ANGER2	V 56	-.053	-.155	-.003	.071	-.211
ANGE3	V 57	.000	-.144	.040	.076	-.200
ANGER4	V 58	.013	-.162	.065	.131	-.182
ANGER5	V 59	.013	-.126	.020	.044	-.163
GHQ1	V 61	-.098	-.149	-.090	-.038	-.071
GHQ7	V 67	-.021	-.075	.034	.030	-.081
GHQ8	V 68	-.077	-.179	-.010	-.040	-.244
GHQ9	V 69	.031	-.062	.005	.159	-.163
GHQ10	V 70	.015	-.114	.045	.111	-.216
GHQ11	V 71	.026	-.113	.062	.071	-.356
GHQ12	V 72	-.052	-.098	.025	-.019	-.038
WELLB1	V 73	.075	.031	.048	-.046	-.013
WELLB2	V 74	.066	.042	.036	-.053	.015
WELLB3	V 75	.045	.041	.040	-.039	.024
WELLB4	V 76	.064	.035	.024	-.028	.069
WELLB5	V 77	.009	.063	-.001	-.007	.050

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	.000				
PA3	V 15	-.051	.000			
PA4	V 16	-.009	.020	.000		
PA5	V 17	-.067	-.002	.012	.000	
NA5	V 18	.005	-.031	.048	.023	.000
SAT1	V 44	-.150	.042	-.019	.018	-.023
SAT2	V 45	-.132	.045	.015	-.014	-.062
SAT3	V 46	-.174	.065	.001	.006	-.051
ANGER1	V 55	.092	.013	.002	-.021	.128
ANGER2	V 56	.044	-.056	-.018	-.065	-.020
ANGE3	V 57	.106	.004	.052	.012	.037
ANGER4	V 58	.054	-.028	.034	-.024	.019
ANGER5	V 59	.063	-.037	.011	-.053	.066
GHQ1	V 61	.065	-.055	-.059	.005	.036
GHQ7	V 67	.055	.029	.041	.057	.160
GHQ8	V 68	.067	.003	-.036	.017	-.051
GHQ9	V 69	.194	-.054	.005	-.035	.072
GHQ10	V 70	.094	-.019	.004	.005	-.006
GHQ11	V 71	-.014	-.037	-.008	-.016	-.046
GHQ12	V 72	.214	.017	.033	.003	.162
WELLB1	V 73	.023	-.020	-.021	-.001	-.064
WELLB2	V 74	.000	-.023	-.054	-.003	-.008
WELLB3	V 75	-.018	-.031	-.068	.005	-.009

WELLB4	V 76	-.001	-.019	-.025	.063	.031
WELLB5	V 77	.030	-.037	-.059	.028	.017

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	.000				
SAT2	V 45	.001	.000			
SAT3	V 46	-.004	-.001	.000		
ANGER1	V 55	.079	.090	.069	.000	
ANGER2	V 56	-.001	.027	-.021	.048	.000
ANGE3	V 57	-.059	-.001	-.077	.005	-.034
ANGER4	V 58	.003	.001	.033	-.014	.000
ANGER5	V 59	-.046	-.001	-.021	-.059	.032
GHQ1	V 61	.116	.073	-.013	-.149	-.080
GHQ7	V 67	-.127	-.107	-.172	-.014	-.029
GHQ8	V 68	.017	.052	-.016	-.089	.005
GHQ9	V 69	-.056	-.101	-.142	.112	-.027
GHQ10	V 70	.115	.055	.051	-.002	.053
GHQ11	V 71	-.006	-.060	-.035	.012	-.079
GHQ12	V 72	.081	.048	-.034	-.089	-.045
WELLB1	V 73	-.038	-.053	.006	-.071	-.017
WELLB2	V 74	-.009	-.015	.028	-.055	-.007
WELLB3	V 75	.028	-.008	.011	-.015	.012
WELLB4	V 76	-.003	-.019	.018	-.042	-.131
WELLB5	V 77	.101	.086	.108	-.016	-.041

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	.000				
ANGER4	V 58	.020	.000			
ANGER5	V 59	.005	-.017	.000		
GHQ1	V 61	-.057	-.065	-.026	.000	
GHQ7	V 67	.057	.007	.051	-.080	.000
GHQ8	V 68	.051	.002	.065	.053	.000
GHQ9	V 69	-.048	-.021	-.004	-.106	.104
GHQ10	V 70	-.006	-.008	.051	-.056	-.032
GHQ11	V 71	.008	-.031	.038	-.012	.006
GHQ12	V 72	-.014	-.049	.077	.029	.020
WELLB1	V 73	.018	.012	.012	-.012	-.029
WELLB2	V 74	.014	.024	.005	.011	-.014
WELLB3	V 75	.076	.080	.007	.005	-.034
WELLB4	V 76	-.076	-.063	-.096	.053	.000
WELLB5	V 77	.026	-.021	-.010	.020	-.071

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	.000				
GHQ9	V 69	-.066	.000			
GHQ10	V 70	.036	-.005	.000		
GHQ11	V 71	.103	.006	.001	.000	
GHQ12	V 72	-.022	.059	-.032	-.047	.000
WELLB1	V 73	.056	-.061	.010	-.001	-.009
WELLB2	V 74	.039	-.034	.000	-.020	.004
WELLB3	V 75	.018	.043	.074	.046	-.019
WELLB4	V 76	-.011	.037	-.057	-.081	.038
WELLB5	V 77	-.051	.043	.014	-.037	-.027

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.000				
WELLB2	V 74	.053	.000			
WELLB3	V 75	-.029	-.016	.000		
WELLB4	V 76	-.046	-.027	.028	.000	
WELLB5	V 77	-.053	-.033	.063	.088	.000

AVERAGE ABSOLUTE COVARIANCE RESIDUALS = .0442
AVERAGE OFF-DIAGONAL ABSOLUTE COVARIANCE RESIDUALS = .0472

TITLE: Measurement Model of Wellness (Sample 1)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.000				
NA1	V 10	-.006	.000			
PA2	V 11	.035	.093	.000		
NA2	V 12	-.075	-.011	.001	.000	
NA3	V 13	-.017	.139	.046	-.101	.000
NA4	V 14	-.114	-.026	-.032	.008	.020
PA3	V 15	-.018	.059	-.004	.006	.024
PA4	V 16	-.023	.068	-.009	.033	.008
PA5	V 17	-.017	.035	-.019	.025	.017
NA5	V 18	-.055	-.032	-.017	.018	.003
SAT1	V 44	-.024	.163	-.062	.024	.046
SAT2	V 45	-.040	.124	-.045	-.003	.052
SAT3	V 46	.021	.112	.013	.036	.059
ANGER1	V 55	-.002	.020	.035	.147	-.005

ANGER2	V 56	-.060	-.136	-.003	.070	-.166
ANGE3	V 57	.000	-.127	.046	.074	-.158
ANGER4	V 58	.014	-.136	.071	.122	-.137
ANGER5	V 59	.015	-.112	.023	.043	-.130
GHQ1	V 61	-.111	-.130	-.101	-.037	-.055
GHQ7	V 67	-.022	-.061	.036	.027	-.059
GHQ8	V 68	-.085	-.151	-.010	-.037	-.184
GHQ9	V 69	.033	-.050	.005	.143	-.118
GHQ10	V 70	.017	-.095	.048	.103	-.162
GHQ11	V 71	.028	-.095	.067	.066	-.266
GHQ12	V 72	-.058	-.085	.028	-.018	-.030
WELLB1	V 73	.112	.036	.072	-.058	-.013
WELLB2	V 74	.099	.049	.053	-.068	.015
WELLB3	V 75	.066	.046	.059	-.049	.025
WELLB4	V 76	.094	.039	.035	-.035	.070
WELLB5	V 77	.012	.067	-.001	-.009	.048

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	.000				
PA3	V 15	-.060	.000			
PA4	V 16	-.011	.030	.000		
PA5	V 17	-.080	-.002	.018	.000	
NA5	V 18	.005	-.033	.053	.024	.000
SAT1	V 44	-.114	.037	-.018	.016	-.015
SAT2	V 45	-.104	.042	.014	-.013	-.043
SAT3	V 46	-.128	.055	.001	.006	-.034
ANGER1	V 55	.080	.013	.003	-.021	.098
ANGER2	V 56	.041	-.062	-.021	-.071	-.017
ANGE3	V 57	.100	.004	.060	.013	.031
ANGER4	V 58	.049	-.029	.038	-.025	.015
ANGER5	V 59	.060	-.041	.013	-.058	.056
GHQ1	V 61	.060	-.060	-.068	.005	.030
GHQ7	V 67	.047	.030	.044	.057	.123
GHQ8	V 68	.060	.003	-.040	.018	-.041
GHQ9	V 69	.168	-.055	.005	-.035	.055
GHQ10	V 70	.084	-.020	.004	.005	-.005
GHQ11	V 71	-.013	-.038	-.008	-.017	-.036
GHQ12	V 72	.198	.018	.038	.003	.133
WELLB1	V 73	.029	-.029	-.032	-.002	-.070
WELLB2	V 74	.000	-.033	-.083	-.005	-.009
WELLB3	V 75	-.022	-.044	-.103	.007	-.010
WELLB4	V 76	-.002	-.027	-.038	.088	.033
WELLB5	V 77	.034	-.049	-.082	.037	.017

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	.000				
SAT2	V 45	.001	.000			
SAT3	V 46	-.002	.000	.000		
ANGER1	V 55	.051	.061	.044	.000	
ANGER2	V 56	-.001	.020	-.014	.039	.000
ANGE3	V 57	-.042	.000	-.053	.004	-.030
ANGER4	V 58	.002	.000	.021	-.011	.000
ANGER5	V 59	-.033	-.001	-.015	-.048	.028
GHQ1	V 61	.082	.053	-.009	-.119	-.069
GHQ7	V 67	-.083	-.073	-.109	-.011	-.023
GHQ8	V 68	.011	.036	-.011	-.069	.004
GHQ9	V 69	-.037	-.068	-.090	.083	-.022
GHQ10	V 70	.078	.038	.033	-.002	.044
GHQ11	V 71	-.004	-.042	-.023	.009	-.066
GHQ12	V 72	.056	.035	-.023	-.070	-.039
WELLB1	V 73	-.035	-.051	.006	-.075	-.020
WELLB2	V 74	-.009	-.014	.026	-.058	-.008
WELLB3	V 75	.025	-.008	.010	-.015	.014
WELLB4	V 76	-.003	-.018	.016	-.044	-.147
WELLB5	V 77	.086	.075	.088	-.015	-.043

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	.000				
ANGER4	V 58	.017	.000			
ANGER5	V 59	.005	-.015	.000		
GHQ1	V 61	-.050	-.054	-.022	.000	
GHQ7	V 67	.046	.005	.042	-.064	.000
GHQ8	V 68	.043	.001	.055	.044	.000
GHQ9	V 69	-.039	-.016	-.003	-.085	.077
GHQ10	V 70	-.005	-.007	.042	-.046	-.024
GHQ11	V 71	.006	-.024	.032	-.010	.005
GHQ12	V 72	-.012	-.040	.067	.024	.016
WELLB1	V 73	.021	.013	.014	-.014	-.031
WELLB2	V 74	.017	.026	.006	.012	-.014
WELLB3	V 75	.087	.087	.009	.006	-.035
WELLB4	V 76	-.086	-.068	-.110	.059	.000
WELLB5	V 77	.027	-.021	-.011	.021	-.069

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	.000				
GHQ9	V 69	-.051	.000			
GHQ10	V 70	.029	-.004	.000		
GHQ11	V 71	.082	.005	.001	.000	
GHQ12	V 72	-.018	.047	-.026	-.038	.000
WELLB1	V 73	.061	-.064	.011	-.001	-.010
WELLB2	V 74	.043	-.036	-.001	-.022	.005
WELLB3	V 75	.019	.045	.079	.049	-.021
WELLB4	V 76	-.011	.038	-.061	-.087	.042
WELLB5	V 77	-.051	.041	.014	-.037	-.028

```
                    WELLB1     WELLB2     WELLB3     WELLB4     WELLB5
                     V 73       V 74       V 75       V 76       V 77
 WELLB1   V 73        .000
 WELLB2   V 74        .080       .000
 WELLB3   V 75       -.042      -.024       .000
 WELLB4   V 76       -.067      -.039       .040       .000
 WELLB5   V 77       -.073      -.045       .085       .119       .000


                  AVERAGE ABSOLUTE STANDARDIZED RESIDUALS     =         .0408
      AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUALS     =         .0436


 LARGEST STANDARDIZED RESIDUALS:

     NO.    PARAMETER   ESTIMATE      NO.    PARAMETER   ESTIMATE
     ---    ---------   --------      ---    ---------   --------
      1     V71, V13      -.266       11     V55, V12        .147
      2     V72, V14       .198       12     V69, V12        .143
      3     V68, V13      -.184       13     V13, V10        .139
      4     V69, V14       .168       14     V58, V13       -.137
      5     V56, V13      -.166       15     V58, V10       -.136
      6     V44, V10       .163       16     V56, V10       -.136
      7     V70, V13      -.162       17     V72, V18        .133
      8     V57, V13      -.158       18     V61, V10       -.130
      9     V68, V10      -.151       19     V59, V13       -.130
     10     V76, V56      -.147       20     V46, V14       -.128
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18-Jan-07      PAGE : 13  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 DISTRIBUTION OF STANDARDIZED RESIDUALS


    ----------------------------------------
    !                                      !
 220-               *                      -
    !               *                      !
    !               *  *                   !
    !               *  *                   !
    !               *  *                   !          RANGE      FREQ PERCENT
 165-               *  *                   -
    !               *  *                   !   1   -0.5  -  --       0    .00%
    !               *  *                   !   2   -0.4  -  -0.5     0    .00%
    !               *  *                   !   3   -0.3  -  -0.4     0    .00%
    !               *  *                   !   4   -0.2  -  -0.3     1    .22%
 110-               *  *                   -   5   -0.1  -  -0.2    25   5.38%
    !               *  *                   !   6    0.0  -  -0.1   224  48.17%
    !               *  *                   !   7    0.1  -   0.0   200  43.01%
    !               *  *                   !   8    0.2  -   0.1    15   3.23%
    !               *  *                   !   9    0.3  -   0.2     0    .00%
  55-               *  *                   -   A    0.4  -   0.3     0    .00%
    !               *  *                   !   B    0.5  -   0.4     0    .00%
    !               *  *                   !   C     ++  -   0.5     0    .00%
    !            *  *  *                   !   -------------------------------
    !            *  *  *  *                !           TOTAL       465 100.00%
    ----------------------------------------
       1  2  3  4  5  6  7  8  9  A  B  C      EACH "*" REPRESENTS 11 RESIDUALS
```

```
18-Jan-07      PAGE : 14  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


  PA1   =V9  =    .643*F1    + 1.000 E9
                  .050
                12.925@
              (   .049)
              ( 13.167@

  NA1   =V10 =    .743*F2    + 1.000 E10
                  .071
                10.418@
              (   .066)
              ( 11.243@

  PA2   =V11 =    .686*F1    + 1.000 E11
                  .048
                14.204@
              (   .057)
              ( 12.131@
```

```
  NA2   =V12 =     .708*F2    + 1.000 E12
                   .063
                 11.215@
               (    .062)
               ( 11.348@

  NA3   =V13 =     .752*F2    + 1.000 E13
                   .082
                  9.173@
               (    .069)
               ( 10.842@

  NA4   =V14 =     .748*F2    + 1.000 E14
                   .065
                 11.496@
               (    .061)
               ( 12.191@

  PA3   =V15 =     .749*F1    + 1.000 E15
                   .049
                 15.395@
               (    .052)
               ( 14.387@

  PA4   =V16 =     .693*F1    + 1.000 E16
                   .046
                 14.948@
               (    .054)
               ( 12.743@

  PA5   =V17 =     .760*F1    + 1.000 E17
                   .048
                 15.792@
               (    .051)
               ( 14.877@

  NA5   =V18 =     .831*F2    + 1.000 E18
                   .074
                 11.246@
               (    .066)
               ( 12.612@

  SAT1  =V44 =    1.234*F7    + 1.000 E44
                   .071
                 17.310@
               (    .084)
               ( 14.720@

  SAT2  =V45 =    1.247*F7    + 1.000 E45
                   .067
                 18.723@
               (    .073)
               ( 17.006@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


18-Jan-07      PAGE : 15  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SAT3  =V46 =    1.244*F7    + 1.000 E46
                   .076
                 16.477@
               (    .074)
               ( 16.821@

ANGER1  =V55 =     .780*F3    + 1.000 E55
                   .075
                 10.433@
               (    .072)
               ( 10.770@

ANGER2  =V56 =     .871*F3    + 1.000 E56
                   .064
                 13.632@
               (    .067)
               ( 13.000@

ANGE3   =V57 =     .959*F3    + 1.000 E57
                   .060
                 16.058@
               (    .064)
               ( 14.910@

ANGER4  =V58 =    1.008*F3    + 1.000 E58
                   .063
                 16.074@
               (    .057)
               ( 17.658@

ANGER5  =V59 =     .897*F3    + 1.000 E59
                   .062
                 14.510@
               (    .073)
               ( 12.210@
```

```
  GHQ1  =V61 =    .707*F4    + 1.000 E61
                  .073
                 9.716@
              (   .087)
              (  8.114@

  GHQ7  =V67 =    .942*F4    + 1.000 E67
                  .072
                13.027@
              (   .070)
              ( 13.442@

  GHQ8  =V68 =    .928*F4    + 1.000 E68
                  .069
                13.451@
              (   .073)
              ( 12.708@

  GHQ9  =V69 =    .886*F5    + 1.000 E69
                  .074
                11.967@
              (   .072)
              ( 12.252@

GHQ10   =V70 =    .990*F5    + 1.000 E70
                  .067
                14.701@
              (   .050)
              ( 19.678@

GHQ11   =V71 =    .879*F5    + 1.000 E71
                  .071
                12.371@
              (   .075)
              ( 11.664@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


18-Jan-07      PAGE : 16  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

GHQ12   =V72 =    .874*F4    + 1.000 E72
                  .068
                12.845@
              (   .072)
              ( 12.131@

WELLB1  =V73 =    .722*F6    + 1.000 E73
                  .046
                15.659@
              (   .045)
              ( 16.101@

WELLB2  =V74 =    .753*F6    + 1.000 E74
                  .045
                16.910@
              (   .042)
              ( 17.850@

WELLB3  =V75 =    .717*F6    + 1.000 E75
                  .048
                15.016@
              (   .043)
              ( 16.709@

WELLB4  =V76 =    .682*F6    + 1.000 E76
                  .049
                13.842@
              (   .049)
              ( 13.838@

WELLB5  =V77 =    .741*F6    + 1.000 E77
                  .053
                14.104@
              (   .053)
              ( 13.948@


18-Jan-07      PAGE : 17  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                  F
               ---                                ---
                               I F1  -   F1               1.000 I
```

```
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I F2  -   F2              1.000 I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I F3  -   F3              1.000 I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I F4  -   F4              1.000 I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I F5  -   F5              1.000 I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I F6  -   F6              1.000 I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I F7  -   F7              1.000 I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I
                                I                                  I

18-Jan-07      PAGE : 18  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                E                                  D
               ---                                ---
E9  -  PA1              .256*I                            I
                        .029 I                            I
                       8.829@I                            I
                    (   .033)I                            I
                    (  7.694@I                            I
                             I                            I
E10 -  NA1              .577*I                            I
                        .071 I                            I
                       8.171@I                            I
                    (   .079)I                            I
                    (  7.265@I                            I
                             I                            I
E11 -  PA2              .202*I                            I
                        .024 I                            I
                       8.360@I                            I
                    (   .038)I                            I
                    (  5.362@I                            I
                             I                            I
E12 -  NA2              .417*I                            I
                        .054 I                            I
                       7.724@I                            I
                    (   .060)I                            I
                    (  6.933@I                            I
                             I                            I
E13 -  NA3              .844*I                            I
                        .097 I                            I
                       8.689@I                            I
                    (   .104)I                            I
                    (  8.153@I                            I
                             I                            I
E14 -  NA4              .429*I                            I
                        .057 I                            I
                       7.537@I                            I
                    (   .072)I                            I
                    (  5.967@I                            I
                             I                            I
E15 -  PA3              .165*I                            I
                        .022 I                            I
                       7.643@I                            I
                    (   .026)I                            I
                    (  6.234@I                            I
                             I                            I
E16 -  PA4              .164*I                            I
                        .021 I                            I
                       7.958@I                            I
                    (   .032)I                            I
```

```
                       (  5.050@I                                  I
                                I                                  I
E17 -  PA5                  .147*I                                  I
                            .020 I                                  I
                           7.302@I                                  I
                       (   .024)I                                  I
                       (  6.160@I                                  I
                                I                                  I
E18 -  NA5                  .569*I                                  I
                            .074 I                                  I
                           7.704@I                                  I
                       (   .094)I                                  I
                       (  6.056@I                                  I
                                I                                  I
E44 -  SAT1                 .213*I                                  I
                            .031 I                                  I
                           6.834@I                                  I
                       (   .074)I                                  I
                       (  2.900@I                                  I
                                I                                  I
E45 -  SAT2                 .071*I                                  I
                            .024 I                                  I
                           2.966@I                                  I
                       (   .043)I                                  I
                       (  1.652)I                                  I
                                I                                  I
```

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18-Jan-07      PAGE : 19  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E46 -  SAT3                 .321*I                                  I
                            .040 I                                  I
                           8.050@I                                  I
                       (   .066)I                                  I
                       (  4.869@I                                  I
                                I                                  I
E55 -ANGER1                 .734*I                                  I
                            .079 I                                  I
                           9.337@I                                  I
                       (   .133)I                                  I
                       (  5.503@I                                  I
                                I                                  I
E56 -ANGER2                 .385*I                                  I
                            .045 I                                  I
                           8.581@I                                  I
                       (   .071)I                                  I
                       (  5.403@I                                  I
                                I                                  I
E57 -ANGE3                  .211*I                                  I
                            .030 I                                  I
                           6.959@I                                  I
                       (   .048)I                                  I
                       (  4.424@I                                  I
                                I                                  I
E58 -ANGER4                 .232*I                                  I
                            .033 I                                  I
                           6.941@I                                  I
                       (   .049)I                                  I
                       (  4.743@I                                  I
                                I                                  I
E59 -ANGER5                 .315*I                                  I
                            .038 I                                  I
                           8.185@I                                  I
                       (   .057)I                                  I
                       (  5.516@I                                  I
                                I                                  I
E61 -  GHQ1                 .667*I                                  I
                            .076 I                                  I
                           8.794@I                                  I
                       (   .113)I                                  I
                       (  5.898@I                                  I
                                I                                  I
E67 -  GHQ7                 .458*I                                  I
                            .066 I                                  I
                           6.983@I                                  I
                       (   .092)I                                  I
                       (  4.953@I                                  I
                                I                                  I
E68 -  GHQ8                 .387*I                                  I
                            .059 I                                  I
                           6.556@I                                  I
                       (   .077)I                                  I
                       (  5.044@I                                  I
                                I                                  I
E69 -  GHQ9                 .564*I                                  I
                            .071 I                                  I
                           7.936@I                                  I
                       (   .157)I                                  I
                       (  3.584@I                                  I
                                I                                  I
E70 -GHQ10                  .284*I                                  I
                            .055 I                                  I
                           5.144@I                                  I
                       (   .092)I                                  I
```

```
                      (  3.098@I                               I
                               I                               I
E71 -GHQ11                 .495*I                               I
                           .064 I                               I
                          7.668@I                               I
                      (   .160)I                               I
                      (  3.091@I                               I
                               I                               I


18-Jan-07      PAGE : 20  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E72 -GHQ12                 .417*I                               I
                           .058 I                               I
                          7.149@I                               I
                      (   .079)I                               I
                      (  5.303@I                               I
                               I                               I
E73 -WELLB1                .143*I                               I
                           .018 I                               I
                          7.827@I                               I
                      (   .039)I                               I
                      (  3.667@I                               I
                               I                               I
E74 -WELLB2                .093*I                               I
                           .014 I                               I
                          6.481@I                               I
                      (   .021)I                               I
                      (  4.495@I                               I
                               I                               I
E75 -WELLB3                .174*I                               I
                           .021 I                               I
                          8.239@I                               I
                      (   .040)I                               I
                      (  4.355@I                               I
                               I                               I
E76 -WELLB4                .226*I                               I
                           .026 I                               I
                          8.740@I                               I
                      (   .042)I                               I
                      (  5.338@I                               I
                               I                               I
E77 -WELLB5                .247*I                               I
                           .029 I                               I
                          8.648@I                               I
                      (   .060)I                               I
                      (  4.096@I                               I
                               I                               I


18-Jan-07      PAGE : 21  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                 F
               ---                               ---
                               I F2  -   F2              -.210*I
                               I F1  -   F1               .078 I
                               I                        -2.713@I
                               I                       (   .087)I
                               I                       ( -2.407@I
                               I                                I
                               I F3  -   F3              -.388*I
                               I F1  -   F1               .066 I
                               I                        -5.879@I
                               I                       (   .063)I
                               I                       ( -6.116@I
                               I                                I
                               I F4  -   F4              -.210*I
                               I F1  -   F1               .076 I
                               I                        -2.755@I
                               I                       (   .081)I
                               I                       ( -2.599@I
                               I                                I
                               I F5  -   F5              -.307*I
                               I F1  -   F1               .073 I
                               I                        -4.213@I
                               I                       (   .075)I
                               I                       ( -4.103@I
                               I                                I
                               I F6  -   F6               .750*I
                               I F1  -   F1               .036 I
                               I                        20.768@I
                               I                       (   .042)I
                               I                       ( 18.055@I
                               I                                I
                               I F7  -   F7               .217*I
```

```
                    I F1  -   F1                .072 I
                    I                          3.016@I
                    I                       (   .075)I
                    I                       (  2.904@I
                    I                                I
                    I F3  -   F3                .404*I
                    I F2  -   F2                .069 I
                    I                          5.838@I
                    I                       (   .065)I
                    I                       (  6.238@I
                    I                                I
                    I F4  -   F4               -.063*I
                    I F2  -   F2                .083 I
                    I                          -.756 I
                    I                       (   .096)I
                    I                       (  -.654)I
                    I                                I
                    I F5  -   F5                .291*I
                    I F2  -   F2                .078 I
                    I                          3.726@I
                    I                       (   .078)I
                    I                       (  3.725@I
                    I                                I
                    I F6  -   F6               -.325*I
                    I F2  -   F2                .073 I
                    I                         -4.471@I
                    I                       (   .083)I
                    I                       ( -3.921@I
                    I                                I
                    I F7  -   F7                .114*I
                    I F2  -   F2                .078 I
                    I                          1.454 I
                    I                       (   .076)I
                    I                       (  1.501)I
                    I                                I
                    I F4  -   F4                .058*I
                    I F3  -   F3                .079 I
                    I                           .737 I
                    I                       (   .072)I
                    I                       (   .805)I
                    I                                I
```


MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)

```
                    I F5  -   F5                .744*I
                    I F3  -   F3                .041 I
                    I                         18.133@I
                    I                       (   .046)I
                    I                       ( 16.248@I
                    I                                I
                    I F6  -   F6               -.363*I
                    I F3  -   F3                .067 I
                    I                         -5.428@I
                    I                       (   .064)I
                    I                       ( -5.708@I
                    I                                I
                    I F7  -   F7               -.198*I
                    I F3  -   F3                .072 I
                    I                         -2.728@I
                    I                       (   .078)I
                    I                       ( -2.539@I
                    I                                I
                    I F5  -   F5                .192*I
                    I F4  -   F4                .080 I
                    I                          2.405@I
                    I                       (   .083)I
                    I                       (  2.305@I
                    I                                I
                    I F6  -   F6               -.233*I
                    I F4  -   F4                .075 I
                    I                         -3.107@I
                    I                       (   .086)I
                    I                       ( -2.702@I
                    I                                I
                    I F7  -   F7               -.398*I
                    I F4  -   F4                .067 I
                    I                         -5.973@I
                    I                       (   .072)I
                    I                       ( -5.504@I
                    I                                I
                    I F6  -   F6               -.249*I
                    I F5  -   F5                .075 I
                    I                         -3.331@I
                    I                       (   .076)I
                    I                       ( -3.302@I
                    I                                I
                    I F7  -   F7               -.279*I
                    I F5  -   F5                .073 I
                    I                         -3.835@I
                    I                       (   .068)I
                    I                       ( -4.085@I
                    I                                I
                    I F7  -   F7                .148*I
```

```
                             I F6  -   F6               .073 I
                             I                         2.018@I
                             I                      (   .076)I
                             I                      (  1.956)I
                             I                               I
```

```
18-Jan-07      PAGE : 23  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 STANDARDIZED SOLUTION:                                             R-SQUARED


  PA1   =V9  =   .786*F1    + .618 E9                                  .618
  NA1   =V10 =   .699*F2    + .715 E10                                 .489
  PA2   =V11 =   .836*F1    + .548 E11                                 .699
  NA2   =V12 =   .739*F2    + .674 E12                                 .546
  NA3   =V13 =   .633*F2    + .774 E13                                 .401
  NA4   =V14 =   .753*F2    + .659 E14                                 .566
  PA3   =V15 =   .879*F1    + .477 E15                                 .773
  PA4   =V16 =   .863*F1    + .504 E16                                 .746
  PA5   =V17 =   .893*F1    + .451 E17                                 .797
  NA5   =V18 =   .740*F2    + .672 E18                                 .548
  SAT1  =V44 =   .937*F7    + .351 E44                                 .877
  SAT2  =V45 =   .978*F7    + .209 E45                                 .956
  SAT3  =V46 =   .910*F7    + .414 E46                                 .828
ANGER1  =V55 =   .673*F3    + .739 E55                                 .453
ANGER2  =V56 =   .814*F3    + .580 E56                                 .663
ANGE3   =V57 =   .902*F3    + .432 E57                                 .813
ANGER4  =V58 =   .902*F3    + .431 E58                                 .814
ANGER5  =V59 =   .848*F3    + .530 E59                                 .719
  GHQ1  =V61 =   .655*F4    + .756 E61                                 .428
  GHQ7  =V67 =   .812*F4    + .583 E67                                 .660
  GHQ8  =V68 =   .831*F4    + .557 E68                                 .690
  GHQ9  =V69 =   .763*F5    + .647 E69                                 .581
GHQ10   =V70 =   .881*F5    + .474 E70                                 .775
GHQ11   =V71 =   .781*F5    + .625 E71                                 .610
GHQ12   =V72 =   .804*F4    + .594 E72                                 .647
WELLB1  =V73 =   .886*F6    + .463 E73                                 .785
WELLB2  =V74 =   .927*F6    + .376 E74                                 .859
WELLB3  =V75 =   .864*F6    + .504 E75                                 .746
WELLB4  =V76 =   .821*F6    + .572 E76                                 .673
WELLB5  =V77 =   .831*F6    + .557 E77                                 .690
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18-Jan-07      PAGE : 24  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

                V                            F
               ---                          ---
                             I F2  -   F2              -.210*I
                             I F1  -   F1                    I
                             I                               I
                             I F3  -   F3              -.388*I
                             I F1  -   F1                    I
                             I                               I
                             I F4  -   F4              -.210*I
                             I F1  -   F1                    I
                             I                               I
                             I F5  -   F5              -.307*I
                             I F1  -   F1                    I
                             I                               I
                             I F6  -   F6               .750*I
                             I F1  -   F1                    I
                             I                               I
                             I F7  -   F7               .217*I
                             I F1  -   F1                    I
                             I                               I
                             I F3  -   F3               .404*I
                             I F2  -   F2                    I
                             I                               I
                             I F4  -   F4              -.063*I
                             I F2  -   F2                    I
                             I                               I
                             I F5  -   F5               .291*I
                             I F2  -   F2                    I
                             I                               I
                             I F6  -   F6              -.325*I
                             I F2  -   F2                    I
                             I                               I
                             I F7  -   F7               .114*I
                             I F2  -   F2                    I
                             I                               I
                             I F4  -   F4               .058*I
                             I F3  -   F3                    I
                             I                               I
                             I F5  -   F5               .744*I
                             I F3  -   F3                    I
                             I                               I
```

```
                             I F6  -   F6              -.363*I
                             I F3  -   F3                   I
                             I                              I
                             I F7  -   F7              -.198*I
                             I F3  -   F3                   I
                             I                              I
                             I F5  -   F5               .192*I
                             I F4  -   F4                   I
                             I                              I
```



```
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

                             I F6  -   F6              -.233*I
                             I F4  -   F4                   I
                             I                              I
                             I F7  -   F7              -.398*I
                             I F4  -   F4                   I
                             I                              I
                             I F6  -   F6              -.249*I
                             I F5  -   F5                   I
                             I                              I
                             I F7  -   F7              -.279*I
                             I F5  -   F5                   I
                             I                              I
                             I F7  -   F7               .148*I
                             I F6  -   F6                   I
                             I                              I
```

```
-------------------------------------------------------------------------------
                          E N D    O F    M E T H O D
-------------------------------------------------------------------------------
```



```
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                    =      .685
 COEFFICIENT ALPHA FOR AN OPTIMAL SHORT SCALE               =      .963
 BASED ON THE FOLLOWING  8 VARIABLES
 ANGER1    ANGER2    ANGE3     ANGER4    ANGER5     GHQ9
 GHQ10     GHQ11
 RELIABILITY COEFFICIENT RHO         =      .900
 GREATEST LOWER BOUND RELIABILITY                           =      .955
 GLB RELIABILITY FOR AN OPTIMAL SHORT SCALE                 =      .956
 BASED ON 27 VARIABLES, ALL EXCEPT:
   PA2       NA5       GHQ1
 BENTLER'S DIMENSION-FREE LOWER BOUND RELIABILITY           =      .955
 SHAPIRO'S LOWER BOUND RELIABILITY FOR A WEIGHTED COMPOSITE  =      .768
 WEIGHTS THAT ACHIEVE SHAPIRO'S LOWER BOUND:
   PA1       NA1       PA2       NA2       NA3       NA4
    -.202     -.792      .024      .191      .435     -.016
   PA3       PA4       PA5       NA5       SAT1      SAT2
    -.007     -.006     -.007     -.046      .076      .071
   SAT3    ANGER1    ANGER2    ANGE3     ANGER4    ANGER5
     .078      .074      .066      .078      .071      .062
   GHQ1      GHQ7      GHQ8      GHQ9    GHQ10     GHQ11
    -.120     -.118     -.103      .049      .056      .059
 GHQ12     WELLB1    WELLB2    WELLB3    WELLB4    WELLB5
    -.108      .016      .026      .010      .013      .004


 PARAMETER ESTIMATES APPEAR IN ORDER,
 NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.


 RESIDUAL COVARIANCE MATRIX  (S-SIGMA) :
```

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.000				
NA1	V 10	.003	.000			
PA2	V 11	.051	-.015	.000		
NA2	V 12	-.086	-.060	-.052	.000	
NA3	V 13	-.037	.160	-.011	-.022	.000
NA4	V 14	-.036	-.074	-.053	.057	-.053
PA3	V 15	.008	.024	-.011	-.080	.035
PA4	V 16	-.038	.071	-.007	-.038	.071
PA5	V 17	-.014	.025	.001	-.030	-.004

NA5	V 18	.028	.003	.034	-.021	-.014
SAT1	V 44	.075	.011	.023	-.043	-.051
SAT2	V 45	-.008	-.050	-.032	-.019	.005
SAT3	V 46	-.008	.013	-.038	-.044	.047
ANGER1	V 55	.138	.015	.105	.104	.044
ANGER2	V 56	.075	-.064	.059	-.005	-.065
ANGE3	V 57	.104	-.042	.098	.080	-.052
ANGER4	V 58	.080	-.089	.055	-.008	-.082
ANGER5	V 59	.070	-.159	.014	.011	-.113
GHQ1	V 61	-.104	-.029	.055	.096	.146
GHQ7	V 67	.010	-.094	.003	.056	-.033
GHQ8	V 68	-.050	-.185	.004	-.005	-.174
GHQ9	V 69	.021	.016	.029	.065	-.022
GHQ10	V 70	.103	.008	.069	.033	-.106
GHQ11	V 71	.039	-.036	.083	-.066	-.141
GHQ12	V 72	-.049	-.079	.015	.040	-.097
WELLB1	V 73	.070	-.017	-.025	-.119	.012
WELLB2	V 74	.076	.020	-.015	-.059	.049
WELLB3	V 75	.062	.009	.000	-.022	.093
WELLB4	V 76	.107	-.004	-.010	-.054	.013
WELLB5	V 77	.058	-.004	.011	-.094	.061

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	.000				
PA3	V 15	.009	.000			
PA4	V 16	-.011	.015	.000		
PA5	V 17	.022	-.022	.018	.000	
NA5	V 18	.030	.024	.023	.003	.000
SAT1	V 44	-.003	-.011	.048	.037	.085
SAT2	V 45	-.014	-.021	-.004	.008	.046
SAT3	V 46	-.017	-.023	-.001	-.005	.079
ANGER1	V 55	.034	.008	.037	-.024	.016
ANGER2	V 56	.059	-.014	-.046	-.055	.006
ANGE3	V 57	.087	.080	.029	-.009	.084
ANGER4	V 58	.148	.068	-.018	-.046	.056
ANGER5	V 59	.073	-.037	-.096	-.099	-.035
GHQ1	V 61	.061	.003	.035	.039	.069
GHQ7	V 67	.042	-.016	.001	.016	.102
GHQ8	V 68	-.029	-.060	-.034	.035	.052
GHQ9	V 69	.122	.012	-.054	-.049	.006
GHQ10	V 70	.036	.004	-.014	-.023	-.037
GHQ11	V 71	.029	.055	-.021	-.055	.064
GHQ12	V 72	.063	.029	-.020	.017	.094
WELLB1	V 73	-.034	.030	-.039	-.033	.027
WELLB2	V 74	-.057	.030	-.032	-.019	.033
WELLB3	V 75	.046	.010	-.027	-.013	.070
WELLB4	V 76	.031	.039	-.017	.041	.005
WELLB5	V 77	.027	.048	-.015	.003	.036

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	.000				
SAT2	V 45	.004	.000			
SAT3	V 46	-.004	.000	.000		
ANGER1	V 55	.136	.126	.121	.000	
ANGER2	V 56	.045	.012	.041	.110	.000
ANGE3	V 57	.053	.058	.036	.025	-.056
ANGER4	V 58	-.049	.003	-.044	-.108	-.047
ANGER5	V 59	-.102	-.074	-.084	-.014	.059
GHQ1	V 61	.005	.035	.024	-.211	.003
GHQ7	V 67	-.069	-.066	-.107	-.188	.045
GHQ8	V 68	.077	.062	.027	-.237	-.060
GHQ9	V 69	-.149	-.098	-.113	.025	.042
GHQ10	V 70	.057	.019	.045	.026	-.001
GHQ11	V 71	.086	.083	.116	.044	.040
GHQ12	V 72	.132	.098	.058	-.167	.053
WELLB1	V 73	-.036	-.061	-.048	.005	-.011
WELLB2	V 74	.063	.058	.071	.062	.021
WELLB3	V 75	-.016	-.061	-.021	.034	.027
WELLB4	V 76	.056	.006	.040	.011	-.017
WELLB5	V 77	-.004	-.048	.018	.042	.024

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	.000				
ANGER4	V 58	.091	.000			
ANGER5	V 59	-.050	-.002	.000		
GHQ1	V 61	-.074	-.047	-.007	.000	
GHQ7	V 67	-.011	.032	.081	.004	.000
GHQ8	V 68	-.097	-.060	.021	-.020	-.006
GHQ9	V 69	.003	.014	-.008	.046	.121
GHQ10	V 70	-.052	-.016	-.030	-.027	-.009
GHQ11	V 71	.014	.039	.006	.034	-.073
GHQ12	V 72	.094	.090	.098	.015	-.013
WELLB1	V 73	.016	-.013	-.016	-.073	.023
WELLB2	V 74	.060	-.010	-.004	-.099	-.033
WELLB3	V 75	.056	-.025	.004	.004	.073
WELLB4	V 76	-.034	-.089	-.067	-.062	-.024
WELLB5	V 77	.007	-.027	-.030	.033	.047

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	.000				
GHQ9	V 69	-.078	.000			
GHQ10	V 70	-.071	-.002	.000		
GHQ11	V 71	.018	-.025	.020	.000	
GHQ12	V 72	.037	.046	-.016	.074	.000

WELLB1	V 73	.041	-.038	-.042	-.012	-.041
WELLB2	V 74	-.027	-.035	-.006	.019	-.071
WELLB3	V 75	.076	-.006	.009	.073	-.005
WELLB4	V 76	.025	-.042	.031	-.009	-.048
WELLB5	V 77	.054	.021	.056	.109	-.012

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.000				
WELLB2	V 74	.018	.000			
WELLB3	V 75	.001	-.008	.000		
WELLB4	V 76	-.022	.001	-.002	.000	
WELLB5	V 77	-.015	-.025	.030	.029	.000

AVERAGE ABSOLUTE COVARIANCE RESIDUALS = .0419
AVERAGE OFF-DIAGONAL ABSOLUTE COVARIANCE RESIDUALS = .0448

TITLE: Measurement Model of Wellness (Sample 2)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.000				
NA1	V 10	.004	.000			
PA2	V 11	.082	-.018	.000		
NA2	V 12	-.110	-.058	-.072	.000	
NA3	V 13	-.038	.125	-.012	-.020	.000
NA4	V 14	-.043	-.066	-.069	.059	-.045
PA3	V 15	.013	.029	-.019	-.111	.039
PA4	V 16	-.064	.091	-.013	-.056	.086
PA5	V 17	-.023	.031	.001	-.043	-.005
NA5	V 18	.031	.003	.040	-.020	-.011
SAT1	V 44	.066	.007	.022	-.033	-.032
SAT2	V 45	-.007	-.036	-.033	-.016	.003
SAT3	V 46	-.008	.009	-.038	-.035	.030
ANGER1	V 55	.147	.012	.122	.096	.033
ANGER2	V 56	.086	-.055	.074	-.005	-.052
ANGE3	V 57	.109	-.033	.114	.074	-.039
ANGER4	V 58	.083	-.070	.062	-.008	-.060
ANGER5	V 59	.078	-.133	.016	.011	-.088
GHQ1	V 61	-.113	-.024	.065	.090	.112
GHQ7	V 67	.010	-.075	.003	.052	-.025
GHQ8	V 68	-.058	-.162	.006	-.005	-.142
GHQ9	V 69	.023	.014	.036	.063	-.018
GHQ10	V 70	.120	.007	.088	.033	-.087
GHQ11	V 71	.040	-.028	.093	-.059	-.103
GHQ12	V 72	-.055	-.068	.019	.039	-.077
WELLB1	V 73	.099	-.018	-.038	-.147	.012
WELLB2	V 74	.109	.021	-.023	-.074	.050
WELLB3	V 75	.090	.010	-.001	-.028	.095
WELLB4	V 76	.147	-.004	-.015	-.065	.012
WELLB5	V 77	.076	-.004	.016	-.108	.057

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	.000				
PA3	V 15	.011	.000			
PA4	V 16	-.015	.028	.000		
PA5	V 17	.029	-.039	.033	.000	
NA5	V 18	.027	.028	.029	.004	.000
SAT1	V 44	-.002	-.010	.050	.036	.056
SAT2	V 45	-.011	-.022	-.004	.008	.033
SAT3	V 46	-.013	-.023	-.001	-.005	.054
ANGER1	V 55	.029	.009	.046	-.029	.013
ANGER2	V 56	.055	-.017	-.062	-.070	.005
ANGE3	V 57	.075	.093	.036	-.010	.067
ANGER4	V 58	.125	.078	-.022	-.053	.044
ANGER5	V 59	.065	-.045	-.124	-.121	-.029
GHQ1	V 61	.054	.004	.044	.047	.056
GHQ7	V 67	.037	-.019	.001	.019	.082
GHQ8	V 68	-.027	-.076	-.045	.045	.045
GHQ9	V 69	.110	.015	-.070	-.061	.005
GHQ10	V 70	.034	.005	-.020	-.030	-.032
GHQ11	V 71	.025	.062	-.025	-.062	.049
GHQ12	V 72	.058	.036	-.026	.021	.079
WELLB1	V 73	-.039	.047	-.064	-.052	.029
WELLB2	V 74	-.065	.047	-.054	-.029	.035
WELLB3	V 75	.055	.016	-.045	-.020	.076
WELLB4	V 76	.034	.059	-.028	.063	.005
WELLB5	V 77	.029	.069	-.022	.005	.035

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	.000				
SAT2	V 45	.002	.000			
SAT3	V 46	-.002	.000	.000		
ANGER1	V 55	.087	.087	.080	.000	
ANGER2	V 56	.031	.009	.029	.091	.000

ANGE3	V 57	.034	.040	.024	.019	-.047
ANGER4	V 58	-.031	.002	-.028	-.082	-.038
ANGER5	V 59	-.068	-.054	-.058	-.011	.051
GHQ1	V 61	.003	.025	.016	-.166	.002
GHQ7	V 67	-.045	-.046	-.071	-.146	.037
GHQ8	V 68	.054	.047	.020	-.199	-.054
GHQ9	V 69	-.100	-.071	-.079	.020	.036
GHQ10	V 70	.040	.014	.033	.022	-.001
GHQ11	V 71	.054	.056	.074	.033	.032
GHQ12	V 72	.090	.073	.041	-.137	.047
WELLB1	V 73	-.031	-.057	-.042	.006	-.012
WELLB2	V 74	.055	.054	.063	.065	.024
WELLB3	V 75	-.014	-.058	-.019	.035	.031
WELLB4	V 76	.047	.005	.035	.011	-.019
WELLB5	V 77	-.003	-.041	.014	.040	.025

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	.000				
ANGER4	V 58	.068	.000			
ANGER5	V 59	-.040	-.002	.000		
GHQ1	V 61	-.058	-.037	-.006	.000	
GHQ7	V 67	-.008	.024	.065	.003	.000
GHQ8	V 68	-.082	-.049	.018	-.017	-.005
GHQ9	V 69	.003	.011	-.006	.038	.099
GHQ10	V 70	-.044	-.013	-.027	-.024	-.008
GHQ11	V 71	.011	.029	.005	.026	-.055
GHQ12	V 72	.077	.073	.084	.012	-.011
WELLB1	V 73	.016	-.013	-.017	-.077	.024
WELLB2	V 74	.062	-.010	-.004	-.104	-.034
WELLB3	V 75	.058	-.026	.004	.004	.077
WELLB4	V 76	-.034	-.087	-.070	-.063	-.025
WELLB5	V 77	.007	-.025	-.030	.032	.045

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	.000				
GHQ9	V 69	-.069	.000			
GHQ10	V 70	-.066	-.001	.000		
GHQ11	V 71	.015	-.020	.016	.000	
GHQ12	V 72	.033	.040	-.015	.059	.000
WELLB1	V 73	.046	-.041	-.047	-.012	-.046
WELLB2	V 74	-.031	-.038	-.007	.019	-.078
WELLB3	V 75	.087	-.007	.010	.074	-.006
WELLB4	V 76	.027	-.044	.035	-.009	-.052
WELLB5	V 77	.057	.021	.059	.101	-.012

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.000				
WELLB2	V 74	.025	.000			
WELLB3	V 75	.002	-.012	.000		
WELLB4	V 76	-.029	.001	-.003	.000	
WELLB5	V 77	-.019	-.032	.039	.036	.000

AVERAGE ABSOLUTE STANDARDIZED RESIDUALS = .0401
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUALS = .0429

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V68, V55	-.199	11	V13, V10	.125
2	V61, V55	-.166	12	V58, V14	.125
3	V68, V10	-.162	13	V59, V16	-.124
4	V76, V9	.147	14	V55, V11	.122
5	V73, V12	-.147	15	V59, V17	-.121
6	V55, V9	.147	16	V70, V9	.120
7	V67, V55	-.146	17	V57, V11	.114
8	V68, V13	-.142	18	V61, V9	-.113
9	V72, V55	-.137	19	V61, V13	.112
10	V59, V10	-.133	20	V15, V12	-.111

TITLE: Measurement Model of Wellness (Sample 2)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DISTRIBUTION OF STANDARDIZED RESIDUALS

```
   ----------------------------------------
   !                                      !
220-                 *  *                 -
   !                 *  *                 !
   !                 *  *                 !
   !                 *  *                 !
   !                 *  *                 !          RANGE      FREQ PERCENT
165-                 *  *                 -
   !                 *  *                 !    1   -0.5  -  --        0    .00%
   !                 *  *                 !    2   -0.4  -  -0.5      0    .00%
```

```
    !                *  *                !    3   -0.3  -  -0.4     0    .00%
    !                *  *                !    4   -0.2  -  -0.3     0    .00%
 110-                *  *                -    5   -0.1  -  -0.2    17   3.66%
    !                *  *                !    6    0.0  -  -0.1   215  46.24%
    !                *  *                !    7    0.1  -   0.0   221  47.53%
    !                *  *                !    8    0.2  -   0.1    12   2.58%
    !                *  *                !    9    0.3  -   0.2     0    .00%
  55-                *  *                -    A    0.4  -   0.3     0    .00%
    !                *  *                !    B    0.5  -   0.4     0    .00%
    !                *  *                !    C     ++  -   0.5     0    .00%
    !             *  *  *                !    -------------------------------
    !             *  *  *  *             !            TOTAL       465 100.00%
    ----------------------------------------
       1  2  3  4  5  6  7  8  9  A  B  C      EACH "*" REPRESENTS 11 RESIDUALS


18-Jan-07      PAGE : 29  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)



  PA1   =V9  =     .586*F1    + 1.000 E9
                   .053
                 10.960@
              (    .051)
              (  11.603@

  NA1   =V10 =     .794*F2    + 1.000 E10
                   .072
                 11.060@
              (    .062)
              (  12.817@

  PA2   =V11 =     .588*F1    + 1.000 E11
                   .047
                 12.463@
              (    .045)
              (  12.931@

  NA2   =V12 =     .717*F2    + 1.000 E12
                   .061
                 11.667@
              (    .062)
              (  11.602@

  NA3   =V13 =     .915*F2    + 1.000 E13
                   .075
                 12.270@
              (    .057)
              (  16.018@

  NA4   =V14 =     .769*F2    + 1.000 E14
                   .066
                 11.679@
              (    .056)
              (  13.623@

  PA3   =V15 =     .598*F1    + 1.000 E15
                   .046
                 12.884@
              (    .045)
              (  13.432@

  PA4   =V16 =     .614*F1    + 1.000 E16
                   .042
                 14.782@
              (    .039)
              (  15.612@

  PA5   =V17 =     .642*F1    + 1.000 E17
                   .044
                 14.563@
              (    .039)
              (  16.646@

  NA5   =V18 =     .804*F2    + 1.000 E18
                   .072
                 11.112@
              (    .059)
              (  13.617@

  SAT1  =V44 =    1.272*F7    + 1.000 E44
                   .074
                 17.100@
              (    .081)
              (  15.728@

  SAT2  =V45 =    1.214*F7    + 1.000 E45
                   .067
                 18.039@
              (    .080)
              (  15.256@
```

```
 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


18-Jan-07      PAGE : 30  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SAT3  =V46 =    1.265*F7    +  1.000 E46
                   .071
                 17.736@
              (    .074)
              (  17.069@

ANGER1  =V55 =     .794*F3    +  1.000 E55
                   .073
                 10.879@
              (    .073)
              (  10.926@

ANGER2  =V56 =     .915*F3    +  1.000 E56
                   .062
                 14.859@
              (    .069)
              (  13.339@

ANGE3   =V57 =     .997*F3    +  1.000 E57
                   .066
                 15.172@
              (    .061)
              (  16.384@

ANGER4  =V58 =    1.044*F3    +  1.000 E58
                   .066
                 15.885@
              (    .069)
              (  15.131@

ANGER5  =V59 =     .964*F3    +  1.000 E59
                   .063
                 15.408@
              (    .075)
              (  12.859@

  GHQ1  =V61 =     .800*F4    +  1.000 E61
                   .072
                 11.123@
              (    .083)
              (   9.627@

  GHQ7  =V67 =    1.029*F4    +  1.000 E67
                   .065
                 15.773@
              (    .057)
              (  18.078@

  GHQ8  =V68 =     .873*F4    +  1.000 E68
                   .063
                 13.871@
              (    .073)
              (  11.935@

  GHQ9  =V69 =     .927*F5    +  1.000 E69
                   .065
                 14.202@
              (    .059)
              (  15.702@

GHQ10   =V70 =     .925*F5    +  1.000 E70
                   .061
                 15.243@
              (    .062)
              (  14.981@

GHQ11   =V71 =     .932*F5    +  1.000 E71
                   .073
                 12.809@
              (    .078)
              (  11.960@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


18-Jan-07      PAGE : 31  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

GHQ12   =V72 =     .853*F4    +  1.000 E72
                   .066
                 12.966@
              (    .076)
```

```
             (  11.263@

WELLB1  =V73 =     .778*F6    +  1.000 E73
                   .047
                 16.529@
             (    .047)
             (  16.394@

WELLB2  =V74 =     .790*F6    +  1.000 E74
                   .046
                 17.049@
             (    .048)
             (  16.344@

WELLB3  =V75 =     .761*F6    +  1.000 E75
                   .046
                 16.404@
             (    .052)
             (  14.663@

WELLB4  =V76 =     .753*F6    +  1.000 E76
                   .050
                 14.974@
             (    .052)
             (  14.488@

WELLB5  =V77 =     .794*F6    +  1.000 E77
                   .053
                 14.989@
             (    .054)
             (  14.595@


18-Jan-07      PAGE : 32  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

               V                               F
              ---                             ---
                             I F1  -   F1              1.000 I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I F2  -   F2              1.000 I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I F3  -   F3              1.000 I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I F4  -   F4              1.000 I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I F5  -   F5              1.000 I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I F6  -   F6              1.000 I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I F7  -   F7              1.000 I
                             I                               I
                             I                               I
                             I                               I
                             I                               I
                             I                               I

18-Jan-07      PAGE : 33  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
```

```
                 E                                  D
                ---                                ---
E9  -  PA1               .344*I                                  I
                         .039 I                                  I
                        8.917@I                                  I
                     (   .054)I                                  I
                     (  6.360@I                                  I
                              I                                  I
E10 -  NA1               .568*I                                  I
                         .069 I                                  I
                        8.204@I                                  I
                     (   .084)I                                  I
                     (  6.725@I                                  I
                              I                                  I
E11 -  PA2               .229*I                                  I
                         .027 I                                  I
                        8.451@I                                  I
                     (   .037)I                                  I
                     (  6.203@I                                  I
                              I                                  I
E12 -  NA2               .390*I                                  I
                         .049 I                                  I
                        7.896@I                                  I
                     (   .060)I                                  I
                     (  6.552@I                                  I
                              I                                  I
E13 -  NA3               .535*I                                  I
                         .071 I                                  I
                        7.525@I                                  I
                     (   .097)I                                  I
                     (  5.516@I                                  I
                              I                                  I
E14 -  NA4               .447*I                                  I
                         .057 I                                  I
                        7.890@I                                  I
                     (   .065)I                                  I
                     (  6.921@I                                  I
                              I                                  I
E15 -  PA3               .211*I                                  I
                         .026 I                                  I
                        8.276@I                                  I
                     (   .039)I                                  I
                     (  5.368@I                                  I
                              I                                  I
E16 -  PA4               .125*I                                  I
                         .018 I                                  I
                        7.033@I                                  I
                     (   .021)I                                  I
                     (  6.039@I                                  I
                              I                                  I
E17 -  PA5               .147*I                                  I
                         .020 I                                  I
                        7.228@I                                  I
                     (   .025)I                                  I
                     (  5.865@I                                  I
                              I                                  I
E18 -  NA5               .574*I                                  I
                         .070 I                                  I
                        8.180@I                                  I
                     (   .098)I                                  I
                     (  5.840@I                                  I
                              I                                  I
E44 -  SAT1              .244*I                                  I
                         .033 I                                  I
                        7.350@I                                  I
                     (   .065)I                                  I
                     (  3.772@I                                  I
                              I                                  I
E45 -  SAT2              .124*I                                  I
                         .023 I                                  I
                        5.299@I                                  I
                     (   .043)I                                  I
                     (  2.904@I                                  I
                              I                                  I
```

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18-Jan-07      PAGE : 34  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E46 -  SAT3              .168*I                                  I
                         .027 I                                  I
                        6.099@I                                  I
                     (   .054)I                                  I
                     (  3.121@I                                  I
                              I                                  I
E55 -ANGER1              .665*I                                  I
                         .072 I                                  I
                        9.223@I                                  I
                     (   .093)I                                  I
                     (  7.133@I                                  I
                              I                                  I
E56 -ANGER2              .287*I                                  I
                         .036 I                                  I
                        7.940@I                                  I
                     (   .059)I                                  I
```

```
                      (   4.874@I                                 I
                               I                                 I
E57 -ANGE3                 .307*I                                 I
                           .040 I                                 I
                          7.727@I                                 I
                      (    .056)I                                 I
                      (   5.492@I                                 I
                               I                                 I
E58 -ANGER4                .260*I                                 I
                           .037 I                                 I
                          7.103@I                                 I
                      (    .060)I                                 I
                      (   4.330@I                                 I
                               I                                 I
E59 -ANGER5                .265*I                                 I
                           .035 I                                 I
                          7.545@I                                 I
                      (    .053)I                                 I
                      (   5.028@I                                 I
                               I                                 I
E61 -  GHQ1                .606*I                                 I
                           .069 I                                 I
                          8.769@I                                 I
                      (    .101)I                                 I
                      (   6.019@I                                 I
                               I                                 I
E67 -  GHQ7                .226*I                                 I
                           .045 I                                 I
                          5.072@I                                 I
                      (    .063)I                                 I
                      (   3.591@I                                 I
                               I                                 I
E68 -  GHQ8                .328*I                                 I
                           .045 I                                 I
                          7.363@I                                 I
                      (    .097)I                                 I
                      (   3.400@I                                 I
                               I                                 I
E69 -  GHQ9                .320*I                                 I
                           .048 I                                 I
                          6.624@I                                 I
                      (    .064)I                                 I
                      (   4.982@I                                 I
                               I                                 I
E70 -GHQ10                 .215*I                                 I
                           .041 I                                 I
                          5.242@I                                 I
                      (    .063)I                                 I
                      (   3.404@I                                 I
                               I                                 I
E71 -GHQ11                 .505*I                                 I
                           .064 I                                 I
                          7.866@I                                 I
                      (    .157)I                                 I
                      (   3.227@I                                 I
                               I                                 I
```



```
 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E72 -GHQ12                 .413*I                                 I
                           .052 I                                 I
                          8.006@I                                 I
                      (    .073)I                                 I
                      (   5.630@I                                 I
                               I                                 I
E73 -WELLB1                .117*I                                 I
                           .015 I                                 I
                          7.596@I                                 I
                      (    .021)I                                 I
                      (   5.490@I                                 I
                               I                                 I
E74 -WELLB2                .095*I                                 I
                           .014 I                                 I
                          6.994@I                                 I
                      (    .023)I                                 I
                      (   4.143@I                                 I
                               I                                 I
E75 -WELLB3                .118*I                                 I
                           .015 I                                 I
                          7.713@I                                 I
                      (    .024)I                                 I
                      (   4.966@I                                 I
                               I                                 I
E76 -WELLB4                .194*I                                 I
                           .023 I                                 I
                          8.580@I                                 I
                      (    .034)I                                 I
                      (   5.670@I                                 I
                               I                                 I
E77 -WELLB5                .215*I                                 I
                           .025 I                                 I
                          8.573@I                                 I
                      (    .038)I                                 I
```

```
                    (   5.579@I                              I
                              I                              I


18-Jan-07      PAGE : 36  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 V                                F
                ---                              ---
                              I F2  -   F2               -.368*I
                              I F1  -   F1                .071 I
                              I                        -5.149@I
                              I                      (    .084)I
                              I                      (  -4.358@I
                              I                                I
                              I F3  -   F3               -.332*I
                              I F1  -   F1                .070 I
                              I                        -4.727@I
                              I                      (    .072)I
                              I                      (  -4.573@I
                              I                                I
                              I F4  -   F4               -.202*I
                              I F1  -   F1                .076 I
                              I                        -2.644@I
                              I                      (    .095)I
                              I                      (  -2.120@I
                              I                                I
                              I F5  -   F5               -.261*I
                              I F1  -   F1                .075 I
                              I                        -3.486@I
                              I                      (    .080)I
                              I                      (  -3.253@I
                              I                                I
                              I F6  -   F6                .690*I
                              I F1  -   F1                .043 I
                              I                        15.991@I
                              I                      (    .051)I
                              I                      (  13.469@I
                              I                                I
                              I F7  -   F7                .246*I
                              I F1  -   F1                .072 I
                              I                         3.396@I
                              I                      (    .086)I
                              I                      (   2.850@I
                              I                                I
                              I F3  -   F3                .400*I
                              I F2  -   F2                .069 I
                              I                         5.833@I
                              I                      (    .069)I
                              I                      (   5.800@I
                              I                                I
                              I F4  -   F4                .003*I
                              I F2  -   F2                .081 I
                              I                           .037 I
                              I                      (    .089)I
                              I                      (    .033)I
                              I                                I
                              I F5  -   F5                .362*I
                              I F2  -   F2                .073 I
                              I                         4.986@I
                              I                      (    .073)I
                              I                      (   4.926@I
                              I                                I
                              I F6  -   F6               -.379*I
                              I F2  -   F2                .069 I
                              I                        -5.502@I
                              I                      (    .078)I
                              I                      (  -4.884@I
                              I                                I
                              I F7  -   F7                .031*I
                              I F2  -   F2                .079 I
                              I                           .392 I
                              I                      (    .084)I
                              I                      (    .369)I
                              I                                I
                              I F4  -   F4               -.003*I
                              I F3  -   F3                .078 I
                              I                          -.043 I
                              I                      (    .073)I
                              I                      (   -.046)I
                              I                                I

18-Jan-07      PAGE : 37  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

                              I F5  -   F5                .665*I
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I F3  -   F3               .047 I
I                        14.088@I
I                     (    .057)I
I                     (  11.644@I
I                               I
I F6  -   F6              -.244*I
I F3  -   F3               .072 I
I                        -3.400@I
I                     (    .074)I
I                     (  -3.318@I
I                               I
I F7  -   F7              -.198*I
I F3  -   F3               .073 I
I                        -2.713@I
I                     (    .072)I
I                     (  -2.737@I
I                               I
I F5  -   F5               .073*I
I F4  -   F4               .080 I
I                          .921 I
I                     (    .088)I
I                     (    .829)I
I                               I
I F6  -   F6              -.284*I
I F4  -   F4               .071 I
I                        -3.980@I
I                     (    .098)I
I                     (  -2.892@I
I                               I
I F7  -   F7              -.526*I
I F4  -   F4               .057 I
I                        -9.207@I
I                     (    .052)I
I                     ( -10.141@I
I                               I
I F6  -   F6              -.276*I
I F5  -   F5               .072 I
I                        -3.814@I
I                     (    .078)I
I                     (  -3.549@I
I                               I
I F7  -   F7              -.286*I
I F5  -   F5               .072 I
I                        -3.999@I
I                     (    .071)I
I                     (  -4.024@I
I                               I
I F7  -   F7               .349*I
I F6  -   F6               .066 I
I                         5.277@I
I                     (    .074)I
I                     (   4.702@I
I                               I
```


MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

```
STANDARDIZED SOLUTION:                                              R-SQUARED


  PA1   =V9  =   .707*F1    + .707 E9                                  .500
  NA1   =V10 =   .725*F2    + .689 E10                                 .526
  PA2   =V11 =   .775*F1    + .632 E11                                 .601
  NA2   =V12 =   .754*F2    + .657 E12                                 .568
  NA3   =V13 =   .781*F2    + .624 E13                                 .610
  NA4   =V14 =   .754*F2    + .656 E14                                 .569
  PA3   =V15 =   .793*F1    + .610 E15                                 .628
  PA4   =V16 =   .867*F1    + .499 E16                                 .751
  PA5   =V17 =   .859*F1    + .513 E17                                 .737
  NA5   =V18 =   .728*F2    + .686 E18                                 .530
  SAT1  =V44 =   .932*F7    + .362 E44                                 .869
  SAT2  =V45 =   .960*F7    + .279 E45                                 .922
  SAT3  =V46 =   .951*F7    + .308 E46                                 .905
ANGER1  =V55 =   .697*F3    + .717 E55                                 .486
ANGER2  =V56 =   .863*F3    + .505 E56                                 .745
ANGE3   =V57 =   .874*F3    + .486 E57                                 .764
ANGER4  =V58 =   .898*F3    + .439 E58                                 .807
ANGER5  =V59 =   .882*F3    + .471 E59                                 .778
  GHQ1  =V61 =   .717*F4    + .697 E61                                 .514
  GHQ7  =V67 =   .908*F4    + .419 E67                                 .824
  GHQ8  =V68 =   .836*F4    + .549 E68                                 .699
  GHQ9  =V69 =   .853*F5    + .521 E69                                 .728
GHQ10   =V70 =   .894*F5    + .448 E70                                 .799
GHQ11   =V71 =   .795*F5    + .606 E71                                 .632
GHQ12   =V72 =   .799*F4    + .601 E72                                 .638
WELLB1  =V73 =   .915*F6    + .403 E73                                 .838
WELLB2  =V74 =   .931*F6    + .364 E74                                 .868
WELLB3  =V75 =   .911*F6    + .412 E75                                 .830
WELLB4  =V76 =   .863*F6    + .505 E76                                 .745
WELLB5  =V77 =   .864*F6    + .504 E77                                 .746
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 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

                V                                 F
               ---                               ---
                              I F2  -   F2               -.368*I
                              I F1  -   F1                     I
                              I                                I
                              I F3  -   F3               -.332*I
                              I F1  -   F1                     I
                              I                                I
                              I F4  -   F4               -.202*I
                              I F1  -   F1                     I
                              I                                I
                              I F5  -   F5               -.261*I
                              I F1  -   F1                     I
                              I                                I
                              I F6  -   F6                .690*I
                              I F1  -   F1                     I
                              I                                I
                              I F7  -   F7                .246*I
                              I F1  -   F1                     I
                              I                                I
                              I F3  -   F3                .400*I
                              I F2  -   F2                     I
                              I                                I
                              I F4  -   F4                .003*I
                              I F2  -   F2                     I
                              I                                I
                              I F5  -   F5                .362*I
                              I F2  -   F2                     I
                              I                                I
                              I F6  -   F6               -.379*I
                              I F2  -   F2                     I
                              I                                I
                              I F7  -   F7                .031*I
                              I F2  -   F2                     I
                              I                                I
                              I F4  -   F4               -.003*I
                              I F3  -   F3                     I
                              I                                I
                              I F5  -   F5                .665*I
                              I F3  -   F3                     I
                              I                                I
                              I F6  -   F6               -.244*I
                              I F3  -   F3                     I
                              I                                I
                              I F7  -   F7               -.198*I
                              I F3  -   F3                     I
                              I                                I
                              I F5  -   F5                .073*I
                              I F4  -   F4                     I
                              I                                I

18-Jan-07      PAGE : 40  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

                              I F6  -   F6               -.284*I
                              I F4  -   F4                     I
                              I                                I
                              I F7  -   F7               -.526*I
                              I F4  -   F4                     I
                              I                                I
                              I F6  -   F6               -.276*I
                              I F5  -   F5                     I
                              I                                I
                              I F7  -   F7               -.286*I
                              I F5  -   F5                     I
                              I                                I
                              I F7  -   F7                .349*I
                              I F6  -   F6                     I
                              I                                I

------------------------------------------------------------------------------
                          E N D    O F    M E T H O D
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18-Jan-07      PAGE : 41  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2
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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STATISTICS FOR MULTIPLE POPULATION ANALYSIS

GOODNESS OF FIT SUMMARY FOR METHOD = ML

INDEPENDENCE MODEL CHI-SQUARE = 10321.948 ON 870 DEGREES OF FREEDOM

INDEPENDENCE AIC = 8581.94797 INDEPENDENCE CAIC = 4261.40030
MODEL AIC = -51.00748 MODEL CAIC = -3865.00818

CHI-SQUARE = 1484.993 BASED ON 768 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .00000

FIT INDICES

BENTLER-BONETT NORMED FIT INDEX = .856
BENTLER-BONETT NON-NORMED FIT INDEX = .914
COMPARATIVE FIT INDEX (CFI) = .924
BOLLEN (IFI) FIT INDEX = .925
MCDONALD (MFI) FIT INDEX = .399
LISREL GFI FIT INDEX = .798
LISREL AGFI FIT INDEX = .756
ROOT MEAN-SQUARE RESIDUAL (RMR) = .061
STANDARDIZED RMR = .055
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = .049
90% CONFIDENCE INTERVAL OF RMSEA (.045, .053)

GOODNESS OF FIT SUMMARY FOR METHOD = ROBUST

ROBUST INDEPENDENCE MODEL CHI-SQUARE = 8855.775 ON 870 DEGREES OF FREEDOM

INDEPENDENCE AIC = 7115.77533 INDEPENDENCE CAIC = 2795.22767
MODEL AIC = -481.63651 MODEL CAIC = -4295.63721

SATORRA-BENTLER SCALED CHI-SQUARE = 1054.3635 ON 768 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS .00000

FIT INDICES

BENTLER-BONETT NORMED FIT INDEX = .881
BENTLER-BONETT NON-NORMED FIT INDEX = .959
COMPARATIVE FIT INDEX (CFI) = .964
BOLLEN (IFI) FIT INDEX = .965
MCDONALD (MFI) FIT INDEX = .693
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = .031
90% CONFIDENCE INTERVAL OF RMSEA (.026, .035)

ITERATIVE SUMMARY

ITERATION	PARAMETER ABS CHANGE	ALPHA	FUNCTION
1	.401896	1.00000	4.25760
2	.036627	1.00000	3.84711
3	.005156	1.00000	3.83089
4	.001311	1.00000	3.82843
5	.000576	1.00000	3.82730

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

WALD TEST (FOR DROPPING PARAMETERS)
MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS

		CUMULATIVE MULTIVARIATE STATISTICS			UNIVARIATE INCREMENT	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROBABILITY	CHI-SQUARE	PROBABILITY
1	2, F4,F2	.001	1	.971	.001	.971
2	2, F4,F3	.005	2	.998	.004	.952
3	2, F7,F2	.227	3	.973	.222	.638
4	1, F4,F3	.770	4	.942	.543	.461
5	1, F4,F2	1.966	5	.854	1.197	.274
6	2, F5,F4	3.392	6	.758	1.426	.232
7	1, F7,F2	4.975	7	.663	1.583	.208

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

LAGRANGE MULTIPLIER TEST (FOR ADDING PARAMETERS)

ORDERED UNIVARIATE TEST STATISTICS:

HANCOCK STANDAR-

NO	CODE		PARAMETER	CHI-SQUARE	PROB.	768 DF PROB.	PARAMETER CHANGE	DIZED CHANGE
--	------		---------	------	-----	--------	---------	--------
1	2	12	1, V13,F5	17.415	.000	1.000	-.332	-.280
2	2	12	1, V16,F6	13.990	.000	1.000	-.209	-.260
3	2	12	2, V55,F4	12.883	.000	1.000	-.228	-.200
4	2	12	1, V9,F6	11.925	.001	1.000	.225	.275
5	2	12	1, V13,F3	11.612	.001	1.000	-.278	-.234
6	2	12	2, V9,F6	10.832	.001	1.000	.221	.267
7	2	12	2, V67,F7	10.108	.001	1.000	-.193	-.171
8	2	12	1, V10,F3	10.004	.002	1.000	-.221	-.208
9	2	12	1, V10,F7	8.748	.003	1.000	.182	.171
10	2	12	2, V74,F7	8.273	.004	1.000	.083	.098
11	2	12	1, V12,F5	8.151	.004	1.000	.170	.178
12	2	12	2, V69,F7	8.022	.005	1.000	-.151	-.139
13	2	12	2, V74,F4	7.900	.005	1.000	-.082	-.096
14	2	12	1, V14,F7	7.879	.005	1.000	-.155	-.156
15	2	12	1, V76,F3	7.862	.005	1.000	-.114	-.137
16	2	12	1, V10,F4	7.631	.006	1.000	-.178	-.167
17	2	12	1, V14,F4	7.541	.006	1.000	.159	.160
18	2	12	1, V12,F3	7.130	.008	1.000	.164	.171
19	2	12	1, V67,F7	6.764	.009	1.000	-.171	-.147
20	2	12	1, V10,F5	6.726	.010	1.000	-.176	-.166
21	2	12	2, V59,F1	6.527	.011	1.000	-.121	-.111
22	2	12	1, V14,F5	6.384	.012	1.000	.155	.156
23	2	12	2, V16,F6	6.023	.014	1.000	-.117	-.165
24	2	12	2, V75,F4	5.992	.014	1.000	.075	.090
25	2	12	2, V12,F6	5.709	.017	1.000	-.136	-.143
26	2	12	2, V17,F3	5.588	.018	1.000	-.085	-.114
27	2	12	2, V9,F3	5.315	.021	1.000	.113	.137
28	2	12	2, V14,F3	5.310	.021	1.000	.144	.141
29	2	12	1, V77,F7	5.100	.024	1.000	.089	.099
30	2	12	1, V75,F5	5.094	.024	1.000	.082	.099
31	2	12	1, V11,F6	5.090	.024	1.000	.136	.165
32	2	12	2, V12,F1	5.006	.025	1.000	-.130	-.137
33	2	12	1, V70,F7	4.685	.030	1.000	.131	.116
34	2	12	2, V68,F2	4.677	.031	1.000	-.109	-.105
35	2	12	1, V55,F2	4.538	.033	1.000	.163	.141
36	2	12	1, V14,F3	4.516	.034	1.000	.134	.135
37	2	12	2, V59,F7	4.509	.034	1.000	-.094	-.086
38	2	12	2, V13,F5	4.491	.034	1.000	-.149	-.127
39	2	12	2, V75,F2	4.473	.034	1.000	.070	.083
40	2	12	2, V57,F1	4.435	.035	1.000	.107	.093
41	2	12	1, V68,F2	4.398	.036	1.000	-.124	-.111
42	2	12	1, V13,F4	4.329	.037	1.000	-.157	-.132
43	2	12	2, V10,F4	4.324	.038	1.000	-.130	-.119
44	2	12	2, V72,F7	4.226	.040	1.000	.131	.122
45	2	12	1, V15,F6	4.212	.040	1.000	-.118	-.139
46	2	12	2, V11,F5	4.056	.044	1.000	.083	.109
47	2	12	1, V75,F3	4.030	.045	1.000	.074	.089
48	2	12	2, V11,F3	3.924	.048	1.000	.082	.108
49	2	12	2, V73,F7	3.854	.050	1.000	-.060	-.071
50	2	12	2, V59,F4	3.755	.053	1.000	.086	.079
51	2	12	1, V46,F4	3.724	.054	1.000	-.101	-.074
52	2	12	1, V9,F2	3.595	.058	1.000	-.081	-.100
53	2	12	2, V55,F7	3.462	.063	1.000	.117	.103
54	2	12	2, V17,F5	3.384	.066	1.000	-.066	-.088
55	2	12	2, V73,F2	3.286	.070	1.000	-.060	-.071
56	2	12	1, V9,F4	3.123	.077	1.000	-.075	-.091
57	2	12	2, V68,F3	3.117	.077	1.000	-.086	-.082
58	2	12	1, V71,F2	3.111	.078	1.000	-.118	-.105
59	2	12	2, V10,F3	3.109	.078	1.000	-.121	-.111
60	2	12	2, V77,F5	3.030	.082	1.000	.069	.075
61	2	12	2, V13,F3	3.025	.082	1.000	-.122	-.104
62	2	12	2, V15,F6	2.991	.084	1.000	.096	.127
63	2	12	2, V68,F5	2.991	.084	1.000	-.086	-.083
64	2	12	1, V72,F2	2.988	.084	1.000	.102	.094
65	2	12	2, V14,F5	2.977	.084	1.000	.108	.106
66	2	12	2, V9,F5	2.955	.086	1.000	.084	.101
67	2	12	2, V71,F7	2.890	.089	1.000	.105	.089
68	2	12	1, V69,F7	2.857	.091	1.000	-.110	-.095
69	2	12	1, V69,F2	2.833	.092	1.000	.118	.102
70	2	12	1, V18,F4	2.825	.093	1.000	.111	.099
71	2	12	2, V44,F1	2.794	.095	1.000	.074	.054
72	2	12	2, V76,F3	2.759	.097	1.000	-.060	-.069
73	2	12	1, V76,F5	2.742	.098	1.000	-.067	-.080
74	2	12	2, V76,F1	2.707	.100	1.000	.086	.099
75	2	12	2, V69,F4	2.537	.111	1.000	.083	.076
76	2	12	2, V18,F4	2.469	.116	1.000	.099	.089
77	2	12	2, V73,F5	2.431	.119	1.000	-.048	-.057
78	2	12	1, V11,F5	2.417	.120	1.000	.062	.076
79	2	12	1, V14,F1	2.405	.121	1.000	-.089	-.090
80	2	12	2, V61,F2	2.378	.123	1.000	.098	.088
81	2	12	1, V15,F7	2.320	.128	1.000	.053	.062
82	2	12	2, V59,F2	2.320	.128	1.000	-.077	-.071
83	2	12	1, V59,F4	2.310	.129	1.000	.072	.068
84	2	12	2, V72,F3	2.186	.139	1.000	.078	.073
85	2	12	2, V75,F7	2.138	.144	1.000	-.045	-.054
86	2	12	2, V68,F7	2.105	.147	1.000	.086	.083
87	2	12	2, V16,F3	2.100	.147	1.000	-.049	-.069
88	2	12	1, V59,F5	2.092	.148	1.000	.117	.110
89	2	12	1, V56,F1	2.092	.148	1.000	-.079	-.074
90	2	12	1, V77,F4	2.049	.152	1.000	-.060	-.068
91	2	12	2, V13,F6	2.023	.155	1.000	.097	.083
92	2	12	1, V11,F3	2.020	.155	1.000	.057	.069
93	2	12	2, V16,F5	1.990	.158	1.000	-.047	-.067
94	2	12	1, V10,F1	1.977	.160	1.000	.090	.085
95	2	12	2, V69,F2	1.963	.161	1.000	.082	.076
96	2	12	1, V16,F2	1.958	.162	1.000	.051	.063
97	2	12	1, V73,F7	1.903	.168	1.000	-.043	-.053
98	2	12	1, V15,F5	1.887	.170	1.000	-.052	-.061
99	2	12	1, V55,F4	1.829	.176	1.000	-.092	-.079

100	2	12	1, V76,F1	1.815	.178	1.000	.083	.100
101	2	12	2, V70,F3	1.748	.186	1.000	-.102	-.098
102	2	12	1, V10,F6	1.650	.199	1.000	.085	.080
103	2	12	1, V12,F6	1.619	.203	1.000	-.074	-.077
104	2	12	2, V70,F7	1.606	.205	1.000	.063	.061
105	2	12	2, V46,F4	1.574	.210	1.000	-.058	-.044
106	2	12	2, V13,F4	1.572	.210	1.000	-.079	-.068
107	2	12	2, V70,F4	1.519	.218	1.000	-.060	-.058
108	2	12	1, V44,F5	1.508	.219	1.000	.051	.039
109	2	12	2, V77,F4	1.462	.227	1.000	.048	.052
110	2	12	1, V11,F7	1.414	.234	1.000	-.044	-.053
111	2	12	1, V61,F3	1.409	.235	1.000	-.076	-.071
112	2	12	1, V55,F7	1.359	.244	1.000	.076	.066
113	2	12	1, V57,F1	1.355	.244	1.000	.053	.049
114	2	12	1, V17,F3	1.353	.245	1.000	-.043	-.050
115	2	12	2, V57,F7	1.348	.246	1.000	.055	.048
116	2	12	2, V16,F2	1.348	.246	1.000	.042	.059
117	2	12	2, V57,F6	1.333	.248	1.000	.055	.048
118	2	12	2, V61,F6	1.326	.250	1.000	-.073	-.066
119	2	12	2, V72,F6	1.309	.253	1.000	-.063	-.059
120	2	12	2, V45,F6	1.304	.254	1.000	-.042	-.033
121	2	12	2, V73,F1	1.285	.257	1.000	-.049	-.058
122	2	12	1, V61,F1	1.281	.258	1.000	-.075	-.069
123	2	12	1, V61,F5	1.253	.263	1.000	-.076	-.070
124	2	12	2, V12,F4	1.245	.264	1.000	.059	.062
125	2	12	1, V61,F7	1.242	.265	1.000	.078	.072
126	2	12	1, V46,F6	1.206	.272	1.000	.050	.037
127	2	12	1, V13,F7	1.194	.275	1.000	.079	.066
128	2	12	2, V55,F1	1.175	.278	1.000	.074	.065
129	2	12	1, V16,F3	1.163	.281	1.000	.040	.050
130	2	12	1, V77,F2	1.161	.281	1.000	.048	.054
131	2	12	1, V45,F4	1.146	.284	1.000	.041	.032
132	2	12	2, V69,F1	1.133	.287	1.000	-.058	-.053
133	2	12	2, V58,F6	1.131	.288	1.000	-.049	-.042
134	2	12	2, V57,F2	1.131	.288	1.000	.057	.050
135	2	12	2, V17,F4	1.122	.289	1.000	.037	.050
136	2	12	1, V45,F6	1.080	.299	1.000	-.035	-.027
137	2	12	2, V68,F6	1.072	.300	1.000	.053	.050
138	2	12	2, V10,F1	1.070	.301	1.000	.071	.065
139	2	12	2, V18,F6	1.051	.305	1.000	.069	.063
140	2	12	1, V55,F6	1.045	.307	1.000	-.072	-.062
141	2	12	1, V15,F3	1.012	.314	1.000	-.038	-.045
142	2	12	2, V55,F2	1.007	.316	1.000	.073	.064
143	2	12	2, V18,F7	1.006	.316	1.000	.061	.055
144	2	12	2, V69,F6	.992	.319	1.000	-.053	-.049
145	2	12	1, V17,F4	.987	.320	1.000	.035	.041
146	2	12	1, V72,F7	.981	.322	1.000	.061	.056
147	2	12	1, V17,F6	.962	.327	1.000	.055	.065
148	2	12	1, V70,F3	.925	.336	1.000	.117	.104
149	2	12	1, V56,F6	.897	.344	1.000	-.051	-.047
150	2	12	2, V74,F3	.879	.349	1.000	.026	.031
151	2	12	1, V67,F1	.870	.351	1.000	.057	.049
152	2	12	2, V71,F6	.868	.351	1.000	.057	.049
153	2	12	2, V67,F5	.867	.352	1.000	.047	.041
154	2	12	1, V56,F2	.841	.359	1.000	-.053	-.050
155	2	12	2, V75,F5	.835	.361	1.000	.028	.034
156	2	12	2, V13,F1	.816	.366	1.000	.063	.054
157	2	12	1, V58,F5	.794	.373	1.000	-.069	-.061
158	2	12	1, V18,F7	.789	.374	1.000	-.056	-.050
159	2	12	2, V9,F4	.771	.380	1.000	-.042	-.051
160	2	12	1, V71,F7	.765	.382	1.000	-.054	-.048
161	2	12	1, V46,F1	.754	.385	1.000	.040	.030
162	2	12	1, V67,F2	.748	.387	1.000	.054	.047
163	2	12	2, V67,F3	.748	.387	1.000	.042	.037
164	2	12	2, V77,F1	.745	.388	1.000	.048	.052
165	2	12	2, V15,F3	.742	.389	1.000	.035	.046
166	2	12	1, V57,F6	.726	.394	1.000	.038	.035
167	2	12	2, V9,F2	.724	.395	1.000	-.044	-.054
168	2	12	2, V71,F2	.701	.403	1.000	-.057	-.048
169	2	12	2, V76,F7	.698	.403	1.000	.031	.036
170	2	12	1, V68,F7	.662	.416	1.000	.051	.045
171	2	12	2, V55,F6	.660	.416	1.000	.052	.046
172	2	12	2, V61,F3	.648	.421	1.000	-.049	-.044
173	2	12	1, V68,F5	.647	.421	1.000	.048	.043
174	2	12	2, V59,F6	.631	.427	1.000	-.036	-.033
175	2	12	2, V57,F5	.630	.427	1.000	-.055	-.048
176	2	12	2, V71,F3	.619	.431	1.000	.069	.059
177	2	12	2, V17,F6	.615	.433	1.000	-.040	-.053
178	2	12	2, V45,F1	.610	.435	1.000	-.028	-.022
179	2	12	1, V45,F3	.604	.437	1.000	.026	.021
180	2	12	2, V76,F4	.603	.437	1.000	-.029	-.033
181	2	12	2, V70,F1	.600	.439	1.000	.039	.038
182	2	12	1, V18,F3	.599	.439	1.000	.056	.049
183	2	12	2, V56,F5	.596	.440	1.000	.051	.048
184	2	12	1, V58,F4	.587	.443	1.000	-.034	-.031
185	2	12	1, V67,F6	.579	.447	1.000	-.047	-.040
186	2	12	1, V73,F2	.532	.466	1.000	-.026	-.032
187	2	12	2, V75,F3	.528	.467	1.000	.022	.026
188	2	12	1, V57,F4	.521	.470	1.000	.031	.029
189	2	12	2, V67,F6	.519	.471	1.000	.037	.033
190	2	12	1, V70,F4	.516	.473	1.000	-.044	-.039
191	2	12	1, V68,F6	.512	.474	1.000	.042	.037
192	2	12	2, V18,F1	.512	.474	1.000	.049	.045
193	2	12	1, V56,F4	.503	.478	1.000	-.036	-.034
194	2	12	2, V12,F7	.494	.482	1.000	-.036	-.038
195	2	12	1, V57,F7	.494	.482	1.000	-.029	-.027
196	2	12	2, V12,F3	.483	.487	1.000	.041	.043
197	2	12	1, V9,F7	.482	.488	1.000	-.028	-.034
198	2	12	1, V58,F6	.479	.489	1.000	.032	.029
199	2	12	2, V45,F4	.473	.491	1.000	.030	.023
200	2	12	2, V46,F1	.472	.492	1.000	-.027	-.020
201	2	12	2, V14,F4	.468	.494	1.000	.039	.038

202	2	12	2, V12,F5	.468	.494	1.000	.040	.042
203	2	12	2, V11,F2	.467	.494	1.000	-.030	-.040
204	2	12	1, V45,F5	.463	.496	1.000	-.025	-.019
205	2	12	2, V55,F5	.430	.512	1.000	.060	.053
206	2	12	2, V69,F3	.428	.513	1.000	.052	.048
207	2	12	2, V57,F4	.427	.513	1.000	-.031	-.027
208	2	12	1, V74,F4	.424	.515	1.000	.020	.024
209	2	12	2, V56,F7	.418	.518	1.000	.029	.027
210	2	12	2, V58,F7	.414	.520	1.000	-.029	-.025
211	2	12	2, V44,F6	.405	.525	1.000	.028	.021
212	2	12	1, V77,F1	.396	.529	1.000	-.041	-.046
213	2	12	2, V70,F2	.395	.529	1.000	-.035	-.033
214	2	12	2, V15,F5	.395	.530	1.000	.025	.033
215	2	12	2, V59,F5	.389	.533	1.000	-.041	-.037
216	2	12	2, V46,F6	.380	.537	1.000	.025	.019
217	2	12	2, V67,F2	.380	.538	1.000	.031	.028
218	2	12	2, V72,F5	.379	.538	1.000	.033	.031
219	2	12	1, V44,F2	.376	.540	1.000	.025	.019
220	2	12	1, V67,F3	.370	.543	1.000	.036	.031
221	2	12	1, V59,F1	.362	.547	1.000	-.030	-.029
222	2	12	2, V44,F4	.357	.550	1.000	.031	.023
223	2	12	1, V75,F1	.357	.550	1.000	-.034	-.041
224	2	12	2, V11,F7	.352	.553	1.000	-.023	-.031
225	2	12	1, V68,F3	.351	.553	1.000	.033	.030
226	2	12	2, V56,F1	.338	.561	1.000	-.028	-.026
227	2	12	1, V71,F4	.311	.577	1.000	.035	.031
228	2	12	1, V61,F2	.306	.580	1.000	-.037	-.035
229	2	12	2, V11,F6	.305	.581	1.000	-.031	-.042
230	2	12	1, V73,F1	.303	.582	1.000	.029	.036
231	2	12	1, V9,F5	.303	.582	1.000	.024	.029
232	2	12	1, V13,F6	.294	.587	1.000	.042	.035
233	2	12	2, V46,F2	.290	.590	1.000	.021	.016
234	2	12	1, V57,F5	.290	.591	1.000	-.039	-.037
235	2	12	1, V70,F6	.287	.592	1.000	.033	.029
236	2	12	2, V15,F4	.287	.592	1.000	-.021	-.028
237	2	12	1, V17,F5	.282	.596	1.000	-.019	-.023
238	2	12	1, V69,F3	.279	.597	1.000	-.061	-.053
239	2	12	2, V18,F3	.279	.597	1.000	.037	.033
240	2	12	2, V74,F5	.274	.601	1.000	-.015	-.018
241	2	12	1, V44,F3	.272	.602	1.000	-.021	-.016
242	2	12	1, V74,F5	.258	.612	1.000	-.015	-.019
243	2	12	1, V46,F5	.255	.614	1.000	-.025	-.018
244	2	12	1, V76,F4	.254	.614	1.000	.020	.024
245	2	12	1, V45,F1	.251	.616	1.000	-.017	-.013
246	2	12	1, V55,F5	.250	.617	1.000	.057	.049
247	2	12	1, V13,F1	.249	.618	1.000	.037	.031
248	2	12	2, V15,F7	.240	.624	1.000	-.019	-.025
249	2	12	1, V74,F1	.237	.626	1.000	-.023	-.029
250	2	12	1, V71,F3	.235	.628	1.000	-.055	-.049
251	2	12	2, V74,F1	.223	.637	1.000	-.019	-.023
252	2	12	2, V77,F7	.220	.639	1.000	-.018	-.020
253	2	12	1, V45,F2	.215	.643	1.000	-.016	-.013
254	2	12	1, V69,F1	.211	.646	1.000	-.031	-.027
255	2	12	2, V68,F1	.206	.650	1.000	-.023	-.022
256	2	12	1, V46,F3	.204	.651	1.000	-.021	-.015
257	2	12	1, V68,F1	.202	.653	1.000	-.026	-.023
258	2	12	1, V70,F1	.201	.654	1.000	.028	.025
259	2	12	2, V61,F7	.199	.655	1.000	.033	.029
260	2	12	1, V58,F1	.183	.669	1.000	.020	.018
261	2	12	1, V72,F5	.177	.674	1.000	-.025	-.023
262	2	12	1, V44,F4	.174	.677	1.000	.019	.014
263	2	12	2, V61,F1	.168	.682	1.000	.026	.023
264	2	12	1, V72,F3	.165	.685	1.000	-.023	-.021
265	2	12	1, V11,F2	.164	.685	1.000	.016	.019
266	2	12	2, V58,F1	.162	.687	1.000	.020	.017
267	2	12	2, V56,F2	.153	.696	1.000	-.020	-.019
268	2	12	2, V11,F4	.149	.700	1.000	.016	.020
269	2	12	2, V75,F1	.149	.700	1.000	-.017	-.020
270	2	12	2, V58,F4	.149	.700	1.000	.018	.015
271	2	12	2, V56,F4	.144	.705	1.000	.017	.016
272	2	12	1, V71,F6	.142	.707	1.000	-.023	-.021
273	2	12	1, V59,F6	.137	.711	1.000	-.018	-.017
274	2	12	2, V16,F7	.137	.712	1.000	.012	.017
275	2	12	2, V14,F1	.134	.714	1.000	-.023	-.022
276	2	12	1, V74,F3	.130	.718	1.000	.011	.014
277	2	12	1, V18,F6	.130	.718	1.000	-.025	-.022
278	2	12	2, V45,F3	.130	.719	1.000	.013	.010
279	2	12	2, V73,F3	.130	.719	1.000	-.011	-.013
280	2	12	1, V67,F5	.128	.721	1.000	.022	.019
281	2	12	2, V56,F6	.124	.724	1.000	.016	.015
282	2	12	2, V17,F7	.121	.728	1.000	.012	.016
283	2	12	2, V72,F2	.120	.729	1.000	.019	.018
284	2	12	1, V76,F2	.115	.735	1.000	.014	.017
285	2	12	2, V46,F5	.115	.735	1.000	.014	.010
286	2	12	1, V75,F4	.114	.736	1.000	-.012	-.015
287	2	12	1, V72,F1	.107	.743	1.000	.019	.017
288	2	12	1, V73,F4	.106	.744	1.000	.011	.014
289	2	12	1, V12,F4	.106	.744	1.000	-.018	-.019
290	2	12	2, V16,F4	.106	.745	1.000	-.011	-.015
291	2	12	1, V59,F7	.105	.745	1.000	-.015	-.014
292	2	12	1, V74,F7	.104	.747	1.000	-.009	-.011
293	2	12	2, V71,F4	.100	.752	1.000	-.019	-.016
294	2	12	2, V45,F2	.097	.756	1.000	-.011	-.009
295	2	12	1, V74,F2	.091	.763	1.000	-.010	-.012
296	2	12	1, V69,F4	.081	.775	1.000	.019	.016
297	2	12	2, V73,F4	.081	.776	1.000	.009	.010
298	2	12	1, V44,F6	.075	.784	1.000	.011	.008
299	2	12	2, V58,F5	.075	.784	1.000	.018	.016
300	2	12	1, V56,F7	.075	.785	1.000	.014	.013
301	2	12	2, V71,F1	.075	.785	1.000	.017	.015
302	2	12	2, V14,F7	.074	.786	1.000	-.015	-.015
303	2	12	2, V58,F2	.068	.794	1.000	.014	.012

304	2	12	1, V69,F6	.064	.801	1.000	-.016	-.014
305	2	12	1, V18,F5	.062	.804	1.000	.017	.015
306	2	12	2, V44,F2	.057	.811	1.000	-.010	-.008
307	2	12	2, V67,F1	.057	.811	1.000	.012	.011
308	2	12	2, V9,F7	.055	.815	1.000	.011	.013
309	2	12	2, V45,F5	.052	.820	1.000	-.008	-.007
310	2	12	2, V44,F3	.052	.820	1.000	-.010	-.007
311	2	12	1, V77,F3	.047	.828	1.000	-.009	-.010
312	2	12	1, V73,F5	.046	.830	1.000	-.007	-.009
313	2	12	1, V76,F7	.045	.832	1.000	-.008	-.009
314	2	12	2, V76,F5	.044	.833	1.000	-.008	-.009
315	2	12	2, V74,F2	.044	.834	1.000	-.007	-.008
316	2	12	1, V58,F2	.043	.836	1.000	-.011	-.009
317	2	12	2, V14,F6	.040	.842	1.000	-.012	-.012
318	2	12	1, V12,F7	.039	.844	1.000	.011	.011
319	2	12	1, V15,F4	.036	.849	1.000	.007	.008
320	2	12	2, V76,F2	.035	.851	1.000	-.008	-.009
321	2	12	1, V16,F7	.033	.856	1.000	.006	.008
322	2	12	2, V13,F7	.033	.856	1.000	.011	.010
323	2	12	1, V16,F5	.032	.857	1.000	.007	.008
324	2	12	2, V70,F6	.030	.862	1.000	.009	.008
325	2	12	1, V58,F7	.030	.862	1.000	.007	.007
326	2	12	2, V10,F7	.030	.863	1.000	-.011	-.010
327	2	12	2, V46,F3	.029	.864	1.000	-.007	-.005
328	2	12	1, V15,F2	.029	.865	1.000	-.006	-.007
329	2	12	1, V61,F6	.028	.868	1.000	.011	.010
330	2	12	1, V44,F1	.025	.874	1.000	-.006	-.005
331	2	12	1, V59,F2	.024	.876	1.000	-.008	-.008
332	2	12	2, V72,F1	.020	.888	1.000	-.008	-.007
333	2	12	1, V17,F7	.020	.888	1.000	-.005	-.006
334	2	12	2, V77,F2	.020	.888	1.000	.006	.006
335	2	12	1, V73,F3	.019	.890	1.000	.005	.006
336	2	12	1, V70,F2	.016	.899	1.000	.008	.007
337	2	12	2, V10,F5	.015	.903	1.000	-.008	-.008
338	2	12	2, V10,F6	.014	.905	1.000	.008	.007
339	2	12	2, V44,F5	.013	.910	1.000	-.005	-.004
340	2	12	2, V61,F5	.012	.915	1.000	.007	.006
341	2	12	1, V72,F6	.010	.921	1.000	-.006	-.005
342	2	12	1, V17,F2	.008	.927	1.000	-.003	-.004
343	2	12	1, V46,F2	.007	.935	1.000	-.004	-.003
344	2	12	1, V75,F2	.006	.936	1.000	-.003	-.004
345	2	12	1, V56,F5	.006	.938	1.000	-.007	-.006
346	2	12	1, V75,F7	.006	.939	1.000	.003	.003
347	2	12	1, V71,F1	.006	.940	1.000	-.005	-.004
348	2	12	1, V57,F2	.004	.951	1.000	-.003	-.003
349	2	12	2, V15,F2	.003	.954	1.000	-.002	-.003
350	2	12	1, V16,F4	.003	.954	1.000	.002	.003
351	2	12	1, V18,F1	.003	.957	1.000	-.004	-.003
352	2	12	1, V77,F5	.003	.958	1.000	.002	.003
353	2	12	2, V18,F5	.002	.961	1.000	-.003	-.003
354	2	12	2, V77,F3	.002	.963	1.000	-.002	-.002
355	2	12	1, V9,F3	.002	.964	1.000	-.002	-.002
356	2	12	1, V12,F1	.001	.970	1.000	-.002	-.002
357	2	12	1, V11,F4	.001	.973	1.000	.001	.002
358	2	12	1, V14,F6	.000	.983	1.000	.001	.001
359	2	12	2, V17,F2	.000	.983	1.000	-.001	-.001
360	2	12	1, V55,F1	.000	.999	1.000	.000	.000
361	2	0	2, F4,F4	.000	1.000	1.000	.000	.000
362	2	0	1, F2,F2	.000	1.000	1.000	.000	.000
363	2	0	1, F3,F3	.000	1.000	1.000	.000	.000
364	2	0	2, F1,F1	.000	1.000	1.000	.000	.000
365	2	0	2, F2,F2	.000	1.000	1.000	.000	.000
366	2	0	1, F4,F4	.000	1.000	1.000	.000	.000
367	2	0	1, F5,F5	.000	1.000	1.000	.000	.000
368	2	0	2, F7,F7	.000	1.000	1.000	.000	.000
369	2	0	1, F6,F6	.000	1.000	1.000	.000	.000
370	2	0	1, F7,F7	.000	1.000	1.000	.000	.000
371	2	0	2, F6,F6	.000	1.000	1.000	.000	.000
372	2	0	2, F3,F3	.000	1.000	1.000	.000	.000
373	2	0	2, F5,F5	.000	1.000	1.000	.000	.000
374	2	0	1, F1,F1	.000	1.000	1.000	.000	.000

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

MULTIVARIATE LAGRANGE MULTIPLIER TEST BY SIMULTANEOUS PROCESS IN STAGE 1

PARAMETER SETS (SUBMATRICES) ACTIVE AT THIS STAGE ARE:

PVV PFV PFF PDD GVV GVF GFV GFF BVF BFF

	CUMULATIVE MULTIVARIATE STATISTICS				UNIVARIATE INCREMENT			
							HANCOCK'S SEQUENTIAL	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROB.	CHI-SQUARE	PROB.	D.F.	PROB.
1	1, V13,F5	17.415	1	.000	17.415	.000	768	1.000
2	1, V10,F3	31.662	2	.000	14.247	.000	767	1.000
3	1, V16,F6	45.652	3	.000	13.990	.000	766	1.000
4	2, V55,F4	58.535	4	.000	12.883	.000	765	1.000
5	2, V9,F6	69.367	5	.000	10.832	.001	764	1.000
6	1, V15,F6	79.996	6	.000	10.628	.001	763	1.000
7	2, V67,F7	90.104	7	.000	10.108	.001	762	1.000
8	2, V74,F7	98.377	8	.000	8.273	.004	761	1.000
9	2, V69,F7	106.399	9	.000	8.022	.005	760	1.000

```
  10   1, V76,F3      114.260    10    .000        7.862    .005   759   1.000
  11   1, V67,F7      121.025    11    .000        6.764    .009   758   1.000
  12   1, V10,F4      127.569    12    .000        6.545    .011   757   1.000
  13   2, V59,F1      133.484    13    .000        5.915    .015   756   1.000
  14   2, V12,F6      139.193    14    .000        5.709    .017   755   1.000
  15   2, V14,F3      144.733    15    .000        5.539    .019   754   1.000
  16   2, V17,F3      150.270    16    .000        5.537    .019   753   1.000
  17   2, V75,F2      155.730    17    .000        5.461    .019   752   1.000
  18   1, V77,F7      161.135    18    .000        5.404    .020   751   1.000
  19   2, V75,F4      166.529    19    .000        5.394    .020   750   1.000
  20   2, V68,F2      171.521    20    .000        4.992    .025   749   1.000
  21   1, V68,F2      176.428    21    .000        4.907    .027   748   1.000
  22   1, V70,F7      181.113    22    .000        4.685    .030   747   1.000
  23   1, V55,F2      185.651    23    .000        4.538    .033   746   1.000
  24   1,  V9,F6      189.593    24    .000        3.942    .047   745   1.000


  LAGRANGIAN MULTIPLIER TEST REQUIRED   778342 WORDS OF MEMORY.
  PROGRAM ALLOCATES ******** WORDS.
1
  Execution begins at 12:53:42
  Execution ends   at 12:54:09
  Elapsed time =      27.00 seconds
```

Appendix 3.3 Cross-Validation Analysis of the Seven-Construct Wellbeing Measurement Model (loading-covariance)

```
_leart(cov).out                                                                    _Ë7       ÁÕ%*
_1  1
  EQS, A STRUCTURAL EQUATION PROGRAM          MULTIVARIATE SOFTWARE, INC.
  COPYRIGHT BY P.M. BENTLER                   VERSION 6.1 (C) 1985 - 2005 (B83).

    PROGRAM CONTROL INFORMATION

     1  /TITLE
     2  Measurement Model of Wellness (Sample 1)
     3  /SPECIFICATIONS
     4  DATA='leart1~1.ess';
     5  VARIABLES=99; CASES=204; GROUP=2;
     6  METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
     7  /LABELS
     8  V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
     9  V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
    10  V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
    11  V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
    12  V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
    13  V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
    14  V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
    15  V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
    16  V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
    17  V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
    18  V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
    19  V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
    20  V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
    21  V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
    22  V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
    23  V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
    24  V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
    25  V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
    26  V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
    27  V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
    28  /EQUATIONS
    29  V9 =   *F1 + E9;
    30  V10 =   *F2 + E10;
    31  V11 =   *F1 + E11;
    32  V12 =   *F2 + E12;
    33  V13 =   *F2 + E13;
    34  V14 =   *F2 + E14;
    35  V15 =   *F1 + E15;
    36  V16 =   *F1 + E16;
    37  V17 =   *F1 + E17;
    38  V18 =   *F2 + E18;
    39  V44 =   *F7 + E44;
    40  V45 =   *F7 + E45;
    41  V46 =   *F7 + E46;
    42  V55 =   *F3 + E55;
    43  V56 =   *F3 + E56;
    44  V57 =   *F3 + E57;
    45  V58 =   *F3 + E58;
    46  V59 =   *F3 + E59;
    47  V61 =   *F4 + E61;
    48  V67 =   *F4 + E67;
    49  V68 =   *F4 + E68;
    50  V69 =   *F5 + E69;
    51  V70 =   *F5 + E70;
    52  V71 =   *F5 + E71;


 18-Jan-07      PAGE :  2  EQS     Licensee:
  TITLE:   Measurement Model of Wellness (Sample 1)

  MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

    53  V72 =   *F4 + E72;
    54  V73 =   *F6 + E73;
    55  V74 =   *F6 + E74;
    56  V75 =   *F6 + E75;
    57  V76 =   *F6 + E76;
    58  V77 =   *F6 + E77;
```

```
/VARIANCES
 F1 = 1;
 F2 = 1;
 F3 = 1;
 F4 = 1;
 F5 = 1;
 F6 = 1;
 F7 = 1;
 E9 = *;
 E10 = *;
 E11 = *;
 E12 = *;
 E13 = *;
 E14 = *;
 E15 = *;
 E16 = *;
 E17 = *;
 E18 = *;
 E44 = *;
 E45 = *;
 E46 = *;
 E55 = *;
 E56 = *;
 E57 = *;
 E58 = *;
 E59 = *;
 E61 = *;
 E67 = *;
 E68 = *;
 E69 = *;
 E70 = *;
 E71 = *;
 E72 = *;
 E73 = *;
 E74 = *;
 E75 = *;
 E76 = *;
 E77 = *;
/COVARIANCES
F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;
```

```
18-Jan-07      PAGE :  3  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1
```

```
F3,F6 = *;
F4,F6 = *;
F5,F6 = *;
F1,F7 = *;
F2,F7 = *;
F3,F7 = *;
F4,F7 = *;
F5,F7 = *;
F6,F7 = *;
/PRINT
FIT=ALL;
TABLE=EQUATION;
/END
```

```
     122 CUMULATED RECORDS OF INPUT MODEL FILE WERE READ (GROUP   1)
```

```
18-Jan-07      PAGE :  4  EQS     Licensee:
 TITLE:

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2


   PROGRAM CONTROL INFORMATION
```

```

/TITLE
Measurement Model of Wellness (Sample 2)
/SPECIFICATIONS
DATA='leartl~2.ess';
VARIABLES=99; CASES=204;
METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
/LABELS
V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
```

```
V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
/EQUATIONS
V9 =   *F1 + E9;
V10 =   *F2 + E10;
V11 =   *F1 + E11;
V12 =   *F2 + E12;
V13 =   *F2 + E13;
V14 =   *F2 + E14;
V15 =   *F1 + E15;
V16 =   *F1 + E16;
V17 =   *F1 + E17;
V18 =   *F2 + E18;
V44 =   *F7 + E44;
V45 =   *F7 + E45;
V46 =   *F7 + E46;
V55 =   *F3 + E55;
V56 =   *F3 + E56;
V57 =   *F3 + E57;
V58 =   *F3 + E58;
V59 =   *F3 + E59;
V61 =   *F4 + E61;
V67 =   *F4 + E67;
V68 =   *F4 + E68;
V69 =   *F5 + E69;
V70 =   *F5 + E70;
V71 =   *F5 + E71;
V72 =   *F4 + E72;
V73 =   *F6 + E73;
V74 =   *F6 + E74;
V75 =   *F6 + E75;
V76 =   *F6 + E76;
V77 =   *F6 + E77;
/VARIANCES
```


MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

```
 F1 = 1;
 F2 = 1;
 F3 = 1;
 F4 = 1;
 F5 = 1;
 F6 = 1;
 F7 = 1;
 E9 = *;
 E10 = *;
 E11 = *;
 E12 = *;
 E13 = *;
 E14 = *;
 E15 = *;
 E16 = *;
 E17 = *;
 E18 = *;
 E44 = *;
 E45 = *;
 E46 = *;
 E55 = *;
 E56 = *;
 E57 = *;
 E58 = *;
 E59 = *;
 E61 = *;
 E67 = *;
 E68 = *;
 E69 = *;
 E70 = *;
 E71 = *;
 E72 = *;
 E73 = *;
 E74 = *;
 E75 = *;
 E76 = *;
 E77 = *;
/COVARIANCES
F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;
F3,F6 = *;
F4,F6 = *;
```

```
  235  F5,F6 = *;
  236  F1,F7 = *;
  237  F2,F7 = *;
  238  F3,F7 = *;
  239  F4,F7 = *;


18-Jan-07      PAGE :  6  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

  240  F5,F7 = *;
  241  F6,F7 = *;
  242  /CONSTRAINTS
  243  (1,V9,F1) = (2,V9,F1);
  244  (1,V10,F2) = (2,V10,F2);
  245  (1,V11,F1) = (2,V11,F1);
  246  (1,V12,F2) = (2,V12,F2);
  247  (1,V13,F2) = (2,V13,F2);
  248  (1,V14,F2) = (2,V14,F2);
  249  (1,V15,F1) = (2,V15,F1);
  250  (1,V16,F1) = (2,V16,F1);
  251  (1,V17,F1) = (2,V17,F1);
  252  (1,V18,F2) = (2,V18,F2);
  253  (1,V44,F7) = (2,V44,F7);
  254  (1,V45,F7) = (2,V45,F7);
  255  (1,V46,F7) = (2,V46,F7);
  256  (1,V55,F3) = (2,V55,F3);
  257  (1,V56,F3) = (2,V56,F3);
  258  (1,V57,F3) = (2,V57,F3);
  259  (1,V58,F3) = (2,V58,F3);
  260  (1,V59,F3) = (2,V59,F3);
  261  (1,V61,F4) = (2,V61,F4);
  262  (1,V67,F4) = (2,V67,F4);
  263  (1,V68,F4) = (2,V68,F4);
  264  (1,V69,F5) = (2,V69,F5);
  265  (1,V70,F5) = (2,V70,F5);
  266  (1,V71,F5) = (2,V71,F5);
  267  (1,V72,F4) = (2,V72,F4);
  268  (1,V73,F6) = (2,V73,F6);
  269  (1,V74,F6) = (2,V74,F6);
  270  (1,V75,F6) = (2,V75,F6);
  271  (1,V76,F6) = (2,V76,F6);
  272  (1,V77,F6) = (2,V77,F6);
  273  (1,F1,F2) = (2,F1,F2);
  274  (1,F1,F3) = (2,F1,F3);
  275  (1,F2,F3) = (2,F2,F3);
  276  (1,F1,F4) = (2,F1,F4);
  277  (1,F2,F4) = (2,F2,F4);
  278  (1,F3,F4) = (2,F3,F4);
  279  (1,F1,F5) = (2,F1,F5);
  280  (1,F2,F5) = (2,F2,F5);
  281  (1,F3,F5) = (2,F3,F5);
  282  (1,F4,F5) = (2,F4,F5);
  283  (1,F1,F6) = (2,F1,F6);
  284  (1,F2,F6) = (2,F2,F6);
  285  (1,F3,F6) = (2,F3,F6);
  286  (1,F4,F6) = (2,F4,F6);
  287  (1,F5,F6) = (2,F5,F6);
  288  (1,F1,F7) = (2,F1,F7);
  289  (1,F2,F7) = (2,F2,F7);
  290  (1,F3,F7) = (2,F3,F7);
  291  (1,F4,F7) = (2,F4,F7);
  292  (1,F5,F7) = (2,F5,F7);
  293  (1,F6,F7) = (2,F6,F7);
  294  /PRINT
  295  FIT=ALL;
  296  TABLE=EQUATION;


18-Jan-07      PAGE :  7  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

  297  /LMTEST
  298  PROCESS=SIMULTANEOUS;
  299  SET=PVV,PFV,PFF,PDD,GVV,GVF,GFV,GFF,
  300  BVF,BFF;
  301  /WTEST
  302  PVAL=0.05;
  303  PRIORITY=ZERO;
  304  /END


     304 CUMULATED RECORDS OF INPUT MODEL FILE WERE READ (GROUP   2)

*** NOTE THAT THE PRINT     SECTION ABOVE WILL OVERRIDE
    THE PRINT     SECTION IN A PREVIOUS GROUP.


   DATA IS READ FROM leartl~1.ess
   THERE ARE  99 VARIABLES AND   204 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING *** THESE CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
     9    56    62    82    87    90    99   192


18-Jan-07      PAGE :  8  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)
```

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

SAMPLE STATISTICS BASED ON COMPLETE CASES

UNIVARIATE STATISTICS

VARIABLE	PA1	NA1	PA2	NA2	NA3
MEAN	3.7908	2.6173	3.7449	2.4847	2.5102
SKEWNESS (G1)	-.1068	.1408	-.5615	.2717	.2060
KURTOSIS (G2)	-.3858	-.6513	.4863	-.1856	-1.0136
STANDARD DEV.	.8178	1.0629	.8204	.9580	1.1875

VARIABLE	NA4	PA3	PA4	PA5	NA5
MEAN	2.2959	3.9133	3.9490	3.8010	2.3724
SKEWNESS (G1)	.3855	-.6822	-.8044	-.6101	.4730
KURTOSIS (G2)	-.3651	.5241	.8777	.3889	-.5002
STANDARD DEV.	.9944	.8519	.8022	.8511	1.1228

VARIABLE	SAT1	SAT2	SAT3	ANGER1	ANGER2
MEAN	5.1327	5.1378	5.0561	2.2602	1.9847
SKEWNESS (G1)	-.8118	-.6902	-.7535	.8505	.9136
KURTOSIS (G2)	.6011	.2600	.0973	.3191	.0597
STANDARD DEV.	1.3176	1.2756	1.3670	1.1585	1.0693

VARIABLE	ANGE3	ANGER4	ANGER5	GHQ1	GHQ7
MEAN	2.0816	2.0867	1.8265	3.1531	3.2245
SKEWNESS (G1)	.9388	.8455	1.1584	.3547	.2285
KURTOSIS (G2)	.3215	-.1895	.4503	.2395	-.0274
STANDARD DEV.	1.0638	1.1175	1.0576	1.0799	1.1594

VARIABLE	GHQ8	GHQ9	GHQ10	GHQ11	GHQ12
MEAN	3.0612	2.5102	2.4592	2.1990	3.2653
SKEWNESS (G1)	.1449	.4972	.2646	.8350	.2289
KURTOSIS (G2)	-.0162	-.3787	-.8717	.4610	.0668
STANDARD DEV.	1.1169	1.1613	1.1247	1.1260	1.0865

VARIABLE	WELLB1	WELLB2	WELLB3	WELLB4	WELLB5
MEAN	3.7194	3.7704	3.7347	3.8214	3.7653
SKEWNESS (G1)	-.3569	-.3645	-.3379	-.3553	-.5227
KURTOSIS (G2)	.2734	.0173	-.0995	-.3806	.0134
STANDARD DEV.	.8151	.8123	.8296	.8313	.8921

MULTIVARIATE KURTOSIS

MARDIA'S COEFFICIENT (G2,P) = 269.5042
NORMALIZED ESTIMATE = 43.0539

ELLIPTICAL THEORY KURTOSIS ESTIMATES

MARDIA-BASED KAPPA = .2807 MEAN SCALED UNIVARIATE KURTOSIS = .0044

MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA= .2807

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	53	66	84	105	176
ESTIMATE	1134.4507	933.1427	1235.5015	910.6827	924.8776

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

COVARIANCE MATRIX TO BE ANALYZED: 30 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 196 CASES.

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.669				
NA1	V 10	-.106	1.130			
PA2	V 11	.464	-.026	.673		
NA2	V 12	-.155	.515	-.101	.918	
NA3	V 13	-.118	.735	-.064	.418	1.410
NA4	V 14	-.194	.529	-.134	.538	.587
PA3	V 15	.469	-.064	.511	-.106	-.094
PA4	V 16	.430	-.050	.469	-.078	-.102
PA5	V 17	.476	-.087	.508	-.093	-.103
NA5	V 18	-.163	.579	-.135	.608	.630
SAT1	V 44	.146	.333	.116	.130	.178
SAT2	V 45	.132	.273	.138	.097	.186
SAT3	V 46	.196	.268	.199	.147	.202
ANGER1	V 55	-.197	.259	-.174	.386	.231
ANGER2	V 56	-.270	.107	-.235	.320	.054
ANGE3	V 57	-.239	.144	-.215	.350	.091
ANGER4	V 58	-.238	.141	-.203	.419	.125
ANGER5	V 59	-.211	.144	-.219	.300	.109
GHQ1	V 61	-.193	-.182	-.192	-.069	-.104
GHQ7	V 67	-.148	-.119	-.101	-.012	-.125
GHQ8	V 68	-.203	-.223	-.143	-.081	-.288
GHQ9	V 69	-.144	.130	-.182	.341	.031
GHQ10	V 70	-.180	.100	-.164	.315	.000
GHQ11	V 71	-.148	.077	-.123	.252	-.164
GHQ12	V 72	-.170	-.139	-.101	-.057	-.080
WELLB1	V 73	.423	-.144	.420	-.212	-.189
WELLB2	V 74	.429	-.140	.423	-.227	-.169
WELLB3	V 75	.390	-.133	.409	-.204	-.151
WELLB4	V 76	.393	-.130	.375	-.185	-.098
WELLB5	V 77	.366	-.116	.381	-.178	-.131

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	.989				
PA3	V 15	-.169	.726			
PA4	V 16	-.118	.539	.644		
PA5	V 17	-.187	.567	.539	.724	
NA5	V 18	.628	-.162	-.073	-.110	1.261
SAT1	V 44	-.045	.242	.166	.221	.094
SAT2	V 45	-.026	.248	.202	.192	.056
SAT3	V 46	-.068	.266	.187	.211	.066
ANGER1	V 55	.328	-.213	-.207	-.251	.390
ANGER2	V 56	.307	-.309	-.252	-.321	.272
ANGE3	V 57	.396	-.275	-.206	-.271	.359
ANGER4	V 58	.359	-.321	-.237	-.321	.357
ANGER5	V 59	.334	-.297	-.229	-.317	.368
GHQ1	V 61	.031	-.166	-.161	-.108	-.001
GHQ7	V 67	.010	-.119	-.096	-.094	.111
GHQ8	V 68	.023	-.143	-.171	-.131	-.100
GHQ9	V 69	.387	-.258	-.184	-.242	.286
GHQ10	V 70	.310	-.247	-.207	-.226	.233
GHQ11	V 71	.177	-.239	-.195	-.222	.167
GHQ12	V 72	.172	-.120	-.094	-.137	.116
WELLB1	V 73	-.152	.386	.355	.411	-.259
WELLB2	V 74	-.183	.400	.337	.426	-.211
WELLB3	V 75	-.193	.372	.304	.414	-.203
WELLB4	V 76	-.167	.364	.329	.451	-.154
WELLB5	V 77	-.151	.380	.326	.450	-.184

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	1.736				
SAT2	V 45	1.541	1.627			
SAT3	V 46	1.531	1.551	1.869		
ANGER1	V 55	-.112	-.103	-.122	1.342	
ANGER2	V 56	-.213	-.188	-.235	.727	1.143
ANGE3	V 57	-.293	-.237	-.312	.753	.801
ANGER4	V 58	-.242	-.248	-.215	.772	.878
ANGER5	V 59	-.264	-.222	-.241	.640	.813
GHQ1	V 61	-.231	-.278	-.362	-.117	-.044
GHQ7	V 67	-.589	-.575	-.638	.028	.019
GHQ8	V 68	-.439	-.408	-.475	-.047	.052
GHQ9	V 69	-.360	-.409	-.449	.626	.546
GHQ10	V 70	-.225	-.289	-.293	.572	.694
GHQ11	V 71	-.309	-.366	-.339	.522	.490
GHQ12	V 72	-.348	-.385	-.466	-.049	-.001
WELLB1	V 73	.094	.080	.139	-.275	-.245
WELLB2	V 74	.128	.124	.167	-.268	-.245
WELLB3	V 75	.158	.124	.143	-.218	-.214
WELLB4	V 76	.121	.107	.143	-.235	-.346
WELLB5	V 77	.236	.222	.244	-.226	-.275

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	1.132				
ANGER4	V 58	.988	1.249			
ANGER5	V 59	.866	.887	1.118		
GHQ1	V 61	-.018	-.024	.011	1.166	
GHQ7	V 67	.110	.062	.101	.586	1.344
GHQ8	V 68	.103	.056	.113	.709	.873

GHQ9	V 69	.584	.643	.586	.014	.264
GHQ10	V 70	.701	.734	.711	.078	.148
GHQ11	V 71	.635	.629	.624	.108	.165
GHQ12	V 72	.035	.003	.123	.646	.843
WELLB1	V 73	-.233	-.252	-.223	-.131	-.188
WELLB2	V 74	-.248	-.252	-.240	-.113	-.179
WELLB3	V 75	-.173	-.182	-.226	-.113	-.191
WELLB4	V 76	-.314	-.313	-.318	-.060	-.149
WELLB5	V 77	-.232	-.292	-.251	-.102	-.234

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	1.248				
GHQ9	V 69	.092	1.349			
GHQ10	V 70	.213	.872	1.265		
GHQ11	V 71	.260	.785	.872	1.268	
GHQ12	V 72	.789	.208	.134	.101	1.181
WELLB1	V 73	-.101	-.220	-.168	-.159	-.156
WELLB2	V 74	-.124	-.200	-.186	-.185	-.149
WELLB3	V 75	-.138	-.115	-.103	-.111	-.165
WELLB4	V 76	-.158	-.114	-.225	-.231	-.101
WELLB5	V 77	-.211	-.121	-.169	-.199	-.178

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.664				
WELLB2	V 74	.597	.660			
WELLB3	V 75	.489	.523	.688		
WELLB4	V 76	.447	.487	.516	.691	
WELLB5	V 77	.483	.525	.594	.594	.796

```
BENTLER-WEEKS STRUCTURAL REPRESENTATION:

      NUMBER OF DEPENDENT VARIABLES = 30
          DEPENDENT V'S :     9   10   11   12   13   14   15   16   17   18
          DEPENDENT V'S :    44   45   46   55   56   57   58   59   61   67
          DEPENDENT V'S :    68   69   70   71   72   73   74   75   76   77

      NUMBER OF INDEPENDENT VARIABLES = 37
          INDEPENDENT F'S :     1    2    3    4    5    6    7
          INDEPENDENT E'S :     9   10   11   12   13   14   15   16   17   18
          INDEPENDENT E'S :    44   45   46   55   56   57   58   59   61   67
          INDEPENDENT E'S :    68   69   70   71   72   73   74   75   76   77

      NUMBER OF FREE PARAMETERS =  81
      NUMBER OF FIXED NONZERO PARAMETERS =  37


   DATA IS READ FROM leartl~2.ess
   THERE ARE  99 VARIABLES AND   204 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING *** THESE CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
    12    43    55    96   119   126   140   143   161   163


18-Jan-07      PAGE : 10  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2


 SAMPLE STATISTICS BASED ON COMPLETE CASES


                          UNIVARIATE STATISTICS
                          ---------------------
```

VARIABLE	PA1	NA1	PA2	NA2	NA3
MEAN	3.7474	2.6649	3.7835	2.4794	2.5876
SKEWNESS (G1)	-.1038	-.0210	-.1192	.1862	.1274
KURTOSIS (G2)	-.3755	-.7658	-.4177	-.4414	-.9363
STANDARD DEV.	.8290	1.0945	.7581	.9506	1.1718

VARIABLE	NA4	PA3	PA4	PA5	NA5
MEAN	2.4691	3.9227	3.9845	3.8557	2.4278
SKEWNESS (G1)	.1724	-.3077	-.2408	-.2815	.3683
KURTOSIS (G2)	-.7406	-.2473	-.2790	-.1814	-.5710
STANDARD DEV.	1.0188	.7544	.7088	.7479	1.1046

VARIABLE	SAT1	SAT2	SAT3	ANGER1	ANGER2
MEAN	5.1392	5.2320	5.2371	2.3454	2.0258
SKEWNESS (G1)	-.6945	-.7661	-.7191	.5647	.9430
KURTOSIS (G2)	.2202	.7725	.1695	-.4201	.2744

VARIABLE					
STANDARD DEV.	1.3643	1.2644	1.3294	1.1378	1.0600

VARIABLE	ANGE3	ANGER4	ANGER5	GHQ1	GHQ7
MEAN	2.1546	2.1495	1.8660	3.1959	3.1907
SKEWNESS (G1)	.8062	1.0573	1.1746	.5271	.2204
KURTOSIS (G2)	.0003	.6745	.5316	.5326	-.2435
STANDARD DEV.	1.1412	1.1622	1.0929	1.1164	1.1334

VARIABLE	GHQ8	GHQ9	GHQ10	GHQ11	GHQ12
MEAN	3.2113	2.6237	2.5206	2.3660	3.2474
SKEWNESS (G1)	.4740	.3498	.3251	.5570	.3910
KURTOSIS (G2)	.2208	-.4985	-.4098	-.3428	.4580
STANDARD DEV.	1.0439	1.0858	1.0342	1.1718	1.0680

VARIABLE	WELLB1	WELLB2	WELLB3	WELLB4	WELLB5
MEAN	3.7165	3.7835	3.7010	3.7629	3.6959
SKEWNESS (G1)	-.3386	-.3898	-.5173	-.3652	-.5270
KURTOSIS (G2)	.0460	.1051	.5608	-.0644	.1888
STANDARD DEV.	.8499	.8484	.8353	.8730	.9192

MULTIVARIATE KURTOSIS

MARDIA'S COEFFICIENT (G2,P) = 240.4228
NORMALIZED ESTIMATE = 38.2117

ELLIPTICAL THEORY KURTOSIS ESTIMATES

MARDIA-BASED KAPPA = .2504 MEAN SCALED UNIVARIATE KURTOSIS = -.0242

MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA= .2504

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	34	60	63	91	181
ESTIMATE	1127.1053	1020.5342	1091.7307	883.7402	766.8847

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

COVARIANCE MATRIX TO BE ANALYZED: 30 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 194 CASES.

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.687				
NA1	V 10	-.168	1.198			
PA2	V 11	.396	-.187	.575		
NA2	V 12	-.241	.509	-.207	.904	
NA3	V 13	-.234	.887	-.209	.634	1.373
NA4	V 14	-.202	.536	-.219	.608	.650
PA3	V 15	.359	-.150	.341	-.237	-.167
PA4	V 16	.322	-.109	.354	-.200	-.136
PA5	V 17	.362	-.163	.378	-.200	-.220
NA5	V 18	-.145	.641	-.140	.555	.721
SAT1	V 44	.258	.042	.206	-.015	-.015
SAT2	V 45	.168	-.020	.144	.007	.039
SAT3	V 46	.174	.044	.145	-.016	.083
ANGER1	V 55	-.016	.267	-.049	.331	.335
ANGER2	V 56	-.102	.226	-.119	.257	.270
ANGE3	V 57	-.090	.275	-.096	.366	.313
ANGER4	V 58	-.123	.242	-.149	.291	.300
ANGER5	V 59	-.117	.147	-.174	.287	.240
GHQ1	V 61	-.199	-.027	-.040	.097	.149
GHQ7	V 67	-.112	-.091	-.119	.058	-.030
GHQ8	V 68	-.154	-.183	-.099	-.003	-.171
GHQ9	V 69	-.121	.283	-.113	.306	.284
GHQ10	V 70	-.039	.274	-.073	.272	.200
GHQ11	V 71	-.104	.232	-.060	.176	.167
GHQ12	V 72	-.150	-.077	-.086	.041	-.094
WELLB1	V 73	.384	-.251	.291	-.330	-.257
WELLB2	V 74	.396	-.218	.305	-.274	-.224
WELLB3	V 75	.370	-.220	.308	-.229	-.171
WELLB4	V 76	.411	-.230	.296	-.259	-.249
WELLB5	V 77	.379	-.242	.333	-.309	-.214

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	1.038				
PA3	V 15	-.160	.569			
PA4	V 16	-.184	.382	.502		
PA5	V 17	-.160	.362	.412	.559	
NA5	V 18	.648	-.153	-.159	-.187	1.220
SAT1	V 44	.028	.177	.241	.238	.116
SAT2	V 45	.015	.158	.180	.199	.076
SAT3	V 46	.013	.164	.190	.195	.110
ANGER1	V 55	.278	-.149	-.124	-.193	.271
ANGER2	V 56	.340	-.195	-.233	-.250	.300
ANGE3	V 57	.393	-.118	-.174	-.221	.405
ANGER4	V 58	.468	-.139	-.231	-.268	.392
ANGER5	V 59	.369	-.228	-.292	-.304	.275
GHQ1	V 61	.063	-.094	-.064	-.065	.071
GHQ7	V 67	.045	-.141	-.127	-.117	.105
GHQ8	V 68	-.027	-.165	-.142	-.078	.054
GHQ9	V 69	.379	-.133	-.203	-.205	.276
GHQ10	V 70	.293	-.141	-.163	-.178	.232
GHQ11	V 71	.289	-.091	-.170	-.211	.335
GHQ12	V 72	.065	-.074	-.126	-.094	.096
WELLB1	V 73	-.260	.351	.291	.311	-.210
WELLB2	V 74	-.287	.356	.302	.331	-.207
WELLB3	V 75	-.175	.324	.296	.325	-.162
WELLB4	V 76	-.189	.349	.302	.375	-.224
WELLB5	V 77	-.204	.375	.322	.355	-.206

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	1.861				
SAT2	V 45	1.548	1.599			
SAT3	V 46	1.604	1.535	1.767		
ANGER1	V 55	-.064	-.065	-.077	1.295	
ANGER2	V 56	-.185	-.208	-.187	.836	1.124
ANGE3	V 57	-.198	-.181	-.213	.817	.856
ANGER4	V 58	-.311	-.247	-.305	.720	.908
ANGER5	V 59	-.344	-.306	-.326	.751	.941
GHQ1	V 61	-.530	-.476	-.508	-.213	.000
GHQ7	V 67	-.757	-.723	-.792	-.191	.042
GHQ8	V 68	-.506	-.495	-.553	-.239	-.062
GHQ9	V 69	-.486	-.420	-.449	.514	.606
GHQ10	V 70	-.280	-.303	-.290	.514	.562
GHQ11	V 71	-.253	-.241	-.222	.536	.607
GHQ12	V 72	-.439	-.446	-.510	-.169	.051
WELLB1	V 73	.309	.268	.296	-.145	-.184
WELLB2	V 74	.414	.392	.419	-.091	-.155
WELLB3	V 75	.322	.261	.315	-.114	-.143
WELLB4	V 76	.391	.325	.373	-.135	-.186
WELLB5	V 77	.348	.289	.368	-.112	-.153

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	1.302				
ANGER4	V 58	1.132	1.351			
ANGER5	V 59	.912	1.005	1.194		
GHQ1	V 61	-.077	-.050	-.010	1.246	
GHQ7	V 67	-.014	.028	.078	.828	1.285
GHQ8	V 68	-.100	-.063	.018	.679	.892
GHQ9	V 69	.618	.658	.587	.100	.191
GHQ10	V 70	.562	.626	.562	.027	.061
GHQ11	V 71	.632	.686	.604	.089	-.003
GHQ12	V 72	.091	.087	.096	.697	.864
WELLB1	V 73	-.174	-.211	-.199	-.250	-.205
WELLB2	V 74	-.132	-.211	-.190	-.279	-.264
WELLB3	V 75	-.130	-.219	-.175	-.169	-.150
WELLB4	V 76	-.217	-.280	-.244	-.233	-.245
WELLB5	V 77	-.186	-.229	-.217	-.147	-.185

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	1.090				
GHQ9	V 69	-.019	1.179			
GHQ10	V 70	-.012	.855	1.070		
GHQ11	V 71	.078	.838	.881	1.373	
GHQ12	V 72	.782	.104	.042	.132	1.141
WELLB1	V 73	-.152	-.237	-.240	-.212	-.230
WELLB2	V 74	-.223	-.237	-.208	-.185	-.262
WELLB3	V 75	-.113	-.201	-.186	-.123	-.190
WELLB4	V 76	-.162	-.235	-.161	-.203	-.231
WELLB5	V 77	-.143	-.182	-.147	-.095	-.204

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.722				
WELLB2	V 74	.633	.720			
WELLB3	V 75	.594	.593	.698		
WELLB4	V 76	.565	.596	.571	.762	
WELLB5	V 77	.602	.602	.634	.627	.845

```
BENTLER-WEEKS STRUCTURAL REPRESENTATION:

     NUMBER OF DEPENDENT VARIABLES = 30
         DEPENDENT V'S :      9   10   11   12   13   14   15   16   17   18
         DEPENDENT V'S :     44   45   46   55   56   57   58   59   61   67
```

```
          DEPENDENT V'S :    68   69   70   71   72   73   74   75   76   77

      NUMBER OF INDEPENDENT VARIABLES = 37
          INDEPENDENT F'S :     1    2    3    4    5    6    7
          INDEPENDENT E'S :     9   10   11   12   13   14   15   16   17   18
          INDEPENDENT E'S :    44   45   46   55   56   57   58   59   61   67
          INDEPENDENT E'S :    68   69   70   71   72   73   74   75   76   77

      NUMBER OF FREE PARAMETERS =  81
      NUMBER OF FIXED NONZERO PARAMETERS =  37

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO INDEPENDENCE MODEL.
    CALCULATIONS FOR USER'S MODEL NOW BEGIN.


 3RD STAGE OF COMPUTATION REQUIRED   3141739 WORDS OF MEMORY.
 PROGRAM ALLOCATED 200000000 WORDS

 DETERMINANT OF INPUT MATRIX IN GROUP  1 IS    .17349D-10

 DETERMINANT OF INPUT MATRIX IN GROUP  2 IS    .20252D-11

*** NOTE *** RESIDUAL-BASED STATISTICS CANNOT BE
             CALCULATED BECAUSE OF PIVOTING PROBLEMS.


18-Jan-07      PAGE : 12  EQS     Licensee:
 TITLE:  Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                    =      .669
 COEFFICIENT ALPHA FOR AN OPTIMAL SHORT SCALE               =      .916
 BASED ON THE FOLLOWING  8 VARIABLES
 ANGER1    ANGER2    ANGE3     ANGER4    ANGER5     GHQ9
 GHQ10     GHQ11
 RELIABILITY COEFFICIENT RHO         =      .890
 GREATEST LOWER BOUND RELIABILITY                           =      .949
 GLB RELIABILITY FOR AN OPTIMAL SHORT SCALE                 =      .952
 BASED ON 29 VARIABLES, ALL EXCEPT:
   GHQ1
 BENTLER'S DIMENSION-FREE LOWER BOUND RELIABILITY           =      .949
 SHAPIRO'S LOWER BOUND RELIABILITY FOR A WEIGHTED COMPOSITE  =      .989
 WEIGHTS THAT ACHIEVE SHAPIRO'S LOWER BOUND:
   PA1       NA1       PA2       NA2       NA3       NA4
   -.183      .032     -.187      .084      .043      .101
   PA3       PA4       PA5       NA5       SAT1      SAT2
   -.212     -.207     -.221      .102     -.286     -.295
   SAT3    ANGER1    ANGER2    ANGE3     ANGER4    ANGER5
   -.269      .138      .164      .199      .218      .183
   GHQ1      GHQ7      GHQ8      GHQ9     GHQ10     GHQ11
    .073      .132      .112      .148      .139      .144
 GHQ12     WELLB1    WELLB2    WELLB3    WELLB4    WELLB5
    .114     -.243     -.246     -.194     -.197     -.224


 PARAMETER ESTIMATES APPEAR IN ORDER,
 NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.



 RESIDUAL COVARIANCE MATRIX  (S-SIGMA) :
```

		PA1	NA1	PA2	NA2	NA3
		V 9	V 10	V 11	V 12	V 13
PA1	V 9	.038				
NA1	V 10	.028	-.031			
PA2	V 11	.072	.113	.062		
NA2	V 12	-.031	-.031	.027	-.011	
NA3	V 13	.029	.082	.090	-.183	-.135
NA4	V 14	-.062	-.057	.004	-.002	-.059
PA3	V 15	.051	.085	.076	.031	.070
PA4	V 16	.028	.093	.050	.054	.056
PA5	V 17	.044	.067	.059	.049	.066
NA5	V 18	-.021	-.049	.013	.030	-.062
SAT1	V 44	-.030	.262	-.067	.065	.100
SAT2	V 45	-.042	.204	-.043	.033	.109
SAT3	V 46	.020	.197	.015	.082	.124
ANGER1	V 55	-.024	.017	.006	.163	-.036
ANGER2	V 56	-.073	-.168	-.030	.067	-.249
ANGE3	V 57	-.024	-.158	.009	.072	-.241
ANGER4	V 58	-.012	-.176	.032	.128	-.224
ANGER5	V 59	-.006	-.143	-.006	.036	-.207
GHQ1	V 61	-.098	-.165	-.092	-.054	-.085
GHQ7	V 67	-.023	-.096	.029	.009	-.101
GHQ8	V 68	-.090	-.202	-.026	-.063	-.266
GHQ9	V 69	.016	-.099	-.016	.131	-.221
GHQ10	V 70	-.014	-.137	.008	.096	-.261
GHQ11	V 71	.011	-.151	.042	.042	-.414
GHQ12	V 72	-.060	-.119	.013	-.039	-.058
WELLB1	V 73	.092	.060	.076	-.024	.036
WELLB2	V 74	.089	.070	.070	-.033	.062
WELLB3	V 75	.065	.068	.070	-.019	.070
WELLB4	V 76	.077	.065	.045	-.005	.117
WELLB5	V 77	.028	.093	.029	.015	.099

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	-.017				
PA3	V 15	-.022	.094			
PA4	V 16	.024	.093	.051		
PA5	V 17	-.035	.088	.077	.081	
NA5	V 18	.007	-.005	.079	.053	.012
SAT1	V 44	-.114	.047	-.022	.020	.019
SAT2	V 45	-.094	.056	.017	-.007	-.018
SAT3	V 46	-.138	.070	-.001	.009	-.009
ANGER1	V 55	.088	-.021	-.022	-.052	.133
ANGER2	V 56	.035	-.091	-.042	-.096	-.019
ANGE3	V 57	.098	-.036	.024	-.024	.039
ANGER4	V 58	.045	-.070	.005	-.062	.021
ANGER5	V 59	.050	-.070	-.010	-.082	.063
GHQ1	V 61	.048	-.060	-.060	.001	.017
GHQ7	V 67	.032	.020	.037	.050	.135
GHQ8	V 68	.043	-.018	-.051	-.002	-.078
GHQ9	V 69	.161	-.081	-.013	-.058	.044
GHQ10	V 70	.075	-.063	-.030	-.036	-.018
GHQ11	V 71	-.048	-.063	-.025	-.039	-.074
GHQ12	V 72	.192	.001	.023	-.011	.137
WELLB1	V 73	.050	.019	.001	.031	-.043
WELLB2	V 74	.025	.024	-.026	.037	.011
WELLB3	V 75	.006	.010	-.044	.040	.010
WELLB4	V 76	.026	.013	-.009	.089	.054
WELLB5	V 77	.056	.004	-.035	.063	.038

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	-.038				
SAT2	V 45	-.003	.026			
SAT3	V 46	-.043	.002	-.025		
ANGER1	V 55	.083	.089	.073	-.013	
ANGER2	V 56	.008	.030	-.013	.026	-.039
ANGE3	V 57	-.051	.002	-.069	-.016	-.073
ANGER4	V 58	.012	.003	.040	-.035	-.039
ANGER5	V 59	-.034	.005	-.010	-.091	-.018
GHQ1	V 61	.206	.153	.076	-.132	-.061
GHQ7	V 67	-.015	-.010	-.062	.009	-.003
GHQ8	V 68	.079	.102	.045	-.064	.032
GHQ9	V 69	-.035	-.089	-.123	.122	-.026
GHQ10	V 70	.112	.043	.046	.050	.101
GHQ11	V 71	.015	-.048	-.015	.022	-.079
GHQ12	V 72	.154	.109	.038	-.066	-.020
WELLB1	V 73	-.143	-.153	-.098	-.098	-.044
WELLB2	V 74	-.115	-.115	-.077	-.086	-.038
WELLB3	V 75	-.074	-.105	-.091	-.043	-.016
WELLB4	V 76	-.105	-.116	-.084	-.066	-.154
WELLB5	V 77	-.005	-.016	.001	-.045	-.069

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	-.035				
ANGER4	V 58	-.018	-.036			
ANGER5	V 59	-.046	-.069	-.061		
GHQ1	V 61	-.036	-.043	-.006	-.069	
GHQ7	V 67	.086	.037	.078	-.161	-.075
GHQ8	V 68	.081	.033	.092	.034	-.013
GHQ9	V 69	-.044	-.016	-.010	-.074	.149
GHQ10	V 70	.050	.052	.092	-.013	.028
GHQ11	V 71	.011	-.026	.031	.020	.050
GHQ12	V 72	.013	-.020	.103	-.007	-.015
WELLB1	V 73	-.013	-.021	-.013	.016	.006
WELLB2	V 74	-.021	-.014	-.024	.038	.020
WELLB3	V 75	.044	.046	-.019	.032	-.001
WELLB4	V 76	-.102	-.091	-.117	.082	.036
WELLB5	V 77	-.006	-.055	-.036	.049	-.036

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	.036				
GHQ9	V 69	-.013	-.030			
GHQ10	V 70	.104	.006	.055		
GHQ11	V 71	.156	-.045	.011	-.035	
GHQ12	V 72	.014	.106	.029	.000	.009
WELLB1	V 73	.074	-.038	.021	.021	.014
WELLB2	V 74	.055	-.014	.007	.001	.025
WELLB3	V 75	.035	.064	.082	.067	.002
WELLB4	V 76	.009	.060	-.045	-.058	.061
WELLB5	V 77	-.032	.065	.024	-.014	-.005

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	-.042				
WELLB2	V 74	.017	-.028			
WELLB3	V 75	-.067	-.048	-.034		
WELLB4	V 76	-.093	-.068	-.016	-.053	
WELLB5	V 77	-.095	-.068	.025	.041	-.041

AVERAGE ABSOLUTE COVARIANCE RESIDUALS = .0569
AVERAGE OFF-DIAGONAL ABSOLUTE COVARIANCE RESIDUALS = .0578

18-Jan-07 PAGE : 13 EQS Licensee:
TITLE: Measurement Model of Wellness (Sample 1)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	.057				
NA1	V 10	.032	-.028			
PA2	V 11	.108	.130	.092		
NA2	V 12	-.040	-.030	.035	-.012	
NA3	V 13	.030	.065	.092	-.161	-.096
NA4	V 14	-.076	-.054	.004	-.002	-.050
PA3	V 15	.073	.093	.109	.037	.069
PA4	V 16	.042	.109	.076	.071	.058
PA5	V 17	.064	.074	.084	.060	.065
NA5	V 18	-.022	-.041	.014	.028	-.047
SAT1	V 44	-.028	.187	-.062	.052	.064
SAT2	V 45	-.040	.150	-.041	.027	.072
SAT3	V 46	.018	.135	.013	.062	.076
ANGER1	V 55	-.025	.014	.006	.147	-.026
ANGER2	V 56	-.084	-.148	-.034	.065	-.196
ANGE3	V 57	-.027	-.139	.011	.071	-.191
ANGER4	V 58	-.013	-.148	.035	.119	-.169
ANGER5	V 59	-.007	-.128	-.006	.035	-.165
GHQ1	V 61	-.111	-.144	-.104	-.052	-.067
GHQ7	V 67	-.024	-.078	.030	.008	-.073
GHQ8	V 68	-.098	-.171	-.028	-.058	-.200
GHQ9	V 69	.017	-.080	-.016	.117	-.160
GHQ10	V 70	-.016	-.115	.009	.090	-.195
GHQ11	V 71	.012	-.126	.046	.039	-.310
GHQ12	V 72	-.068	-.103	.014	-.038	-.045
WELLB1	V 73	.138	.070	.114	-.031	.037
WELLB2	V 74	.134	.081	.105	-.043	.064
WELLB3	V 75	.095	.077	.103	-.024	.072
WELLB4	V 76	.113	.074	.066	-.006	.119
WELLB5	V 77	.038	.098	.039	.017	.094

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	-.017				
PA3	V 15	-.026	.129			
PA4	V 16	.029	.136	.080		
PA5	V 17	-.041	.122	.113	.112	
NA5	V 18	.006	-.005	.087	.055	.009
SAT1	V 44	-.087	.042	-.021	.018	.013
SAT2	V 45	-.074	.051	.016	-.006	-.012
SAT3	V 46	-.102	.060	-.001	.007	-.006
ANGER1	V 55	.076	-.022	-.024	-.053	.102
ANGER2	V 56	.033	-.100	-.049	-.105	-.016
ANGE3	V 57	.092	-.039	.028	-.026	.033
ANGER4	V 58	.041	-.073	.006	-.065	.017
ANGER5	V 59	.047	-.077	-.012	-.091	.053
GHQ1	V 61	.045	-.066	-.069	.001	.014
GHQ7	V 67	.028	.020	.040	.050	.103
GHQ8	V 68	.039	-.019	-.056	-.002	-.063
GHQ9	V 69	.139	-.081	-.014	-.059	.033
GHQ10	V 70	.067	-.066	-.033	-.038	-.014
GHQ11	V 71	-.043	-.065	-.028	-.041	-.059
GHQ12	V 72	.177	.001	.026	-.012	.112
WELLB1	V 73	.061	.027	.002	.045	-.046
WELLB2	V 74	.030	.034	-.040	.053	.012
WELLB3	V 75	.007	.015	-.066	.057	.011
WELLB4	V 76	.031	.018	-.013	.125	.057
WELLB5	V 77	.063	.005	-.049	.083	.038

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	-.022				
SAT2	V 45	-.002	.016			
SAT3	V 46	-.024	.001	-.013		
ANGER1	V 55	.054	.060	.046	-.009	
ANGER2	V 56	.006	.022	-.009	.021	-.034
ANGE3	V 57	-.036	.001	-.047	-.013	-.064
ANGER4	V 58	.008	.002	.026	-.027	-.033
ANGER5	V 59	-.024	.003	-.007	-.074	-.016
GHQ1	V 61	.145	.111	.052	-.105	-.052
GHQ7	V 67	-.010	-.007	-.039	.007	-.003
GHQ8	V 68	.054	.071	.029	-.050	.027
GHQ9	V 69	-.023	-.060	-.077	.091	-.021
GHQ10	V 70	.076	.030	.030	.039	.084
GHQ11	V 71	.010	-.033	-.010	.017	-.065
GHQ12	V 72	.107	.078	.025	-.052	-.018
WELLB1	V 73	-.133	-.147	-.088	-.104	-.050
WELLB2	V 74	-.107	-.111	-.069	-.092	-.043
WELLB3	V 75	-.068	-.099	-.080	-.045	-.018
WELLB4	V 76	-.096	-.109	-.074	-.068	-.173
WELLB5	V 77	-.005	-.014	.001	-.043	-.073

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	-.031				
ANGER4	V 58	-.015	-.029			

ANGER5	V 59	-.041	-.059	-.054		
GHQ1	V 61	-.031	-.036	-.005	-.059	
GHQ7	V 67	.069	.029	.063	-.129	-.056
GHQ8	V 68	.068	.027	.078	.028	-.010
GHQ9	V 69	-.035	-.012	-.008	-.059	.110
GHQ10	V 70	.042	.041	.078	-.011	.021
GHQ11	V 71	.009	-.021	.026	.017	.038
GHQ12	V 72	.012	-.016	.090	-.006	-.012
WELLB1	V 73	-.014	-.023	-.015	.019	.006
WELLB2	V 74	-.024	-.015	-.028	.043	.021
WELLB3	V 75	.050	.050	-.022	.036	-.001
WELLB4	V 76	-.116	-.098	-.134	.091	.037
WELLB5	V 77	-.006	-.055	-.039	.050	-.035

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	.029				
GHQ9	V 69	-.010	-.023			
GHQ10	V 70	.083	.005	.044		
GHQ11	V 71	.124	-.035	.009	-.028	
GHQ12	V 72	.011	.084	.024	.000	.008
WELLB1	V 73	.082	-.041	.022	.023	.015
WELLB2	V 74	.061	-.014	.008	.001	.028
WELLB3	V 75	.038	.066	.088	.072	.002
WELLB4	V 76	.010	.063	-.048	-.062	.068
WELLB5	V 77	-.032	.063	.024	-.014	-.005

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	-.064				
WELLB2	V 74	.026	-.042			
WELLB3	V 75	-.099	-.071	-.049		
WELLB4	V 76	-.138	-.100	-.023	-.077	
WELLB5	V 77	-.131	-.094	.034	.055	-.051

AVERAGE ABSOLUTE STANDARDIZED RESIDUALS = .0540
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUALS = .0546

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V71, V13	-.310	11	V59, V13	-.165
2	V68, V13	-.200	12	V13, V12	-.161
3	V56, V13	-.196	13	V69, V13	-.160
4	V70, V13	-.195	14	V45, V10	.150
5	V57, V13	-.191	15	V56, V10	-.148
6	V44, V10	.187	16	V58, V10	-.148
7	V72, V14	.177	17	V73, V45	-.147
8	V76, V56	-.173	18	V55, V12	.147
9	V68, V10	-.171	19	V61, V44	.145
10	V58, V13	-.169	20	V61, V10	-.144

18-Jan-07 PAGE : 14 EQS Licensee:
TITLE: Measurement Model of Wellness (Sample 1)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DISTRIBUTION OF STANDARDIZED RESIDUALS

```
   ----------------------------------------
   !                                      !
200-                    *                 -
   !                 *  *                 !
   !                 *  *                 !
   !                 *  *                 !
   !                 *  *                 !            RANGE      FREQ PERCENT
150-                 *  *                 -
   !                 *  *                 !    1   -0.5  -  --        0    .00%
   !                 *  *                 !    2   -0.4  -  -0.5      0    .00%
   !                 *  *                 !    3   -0.3  -  -0.4      1    .22%
   !                 *  *                 !    4   -0.2  -  -0.3      1    .22%
100-                 *  *                 -    5   -0.1  -  -0.2     34   7.31%
   !                 *  *                 !    6    0.0  -  -0.1    193  41.51%
   !                 *  *                 !    7    0.1  -   0.0    203  43.66%
   !                 *  *                 !    8    0.2  -   0.1     33   7.10%
   !                 *  *                 !    9    0.3  -   0.2      0    .00%
 50-                 *  *                 -    A    0.4  -   0.3      0    .00%
   !                 *  *                 !    B    0.5  -   0.4      0    .00%
   !              *  *  *  *              !    C     ++  -   0.5      0    .00%
   !              *  *  *  *              !    -------------------------------
   !              *  *  *  *              !            TOTAL       465 100.00%
   ----------------------------------------
      1  2  3  4  5  6  7  8  9  A  B  C       EACH "*" REPRESENTS 10 RESIDUALS
```

18-Jan-07 PAGE : 15 EQS Licensee:
TITLE: Measurement Model of Wellness (Sample 1)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

```
 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


  PA1   =V9  =     .614*F1    +  1.000 E9
                   .036
                 16.962@
              (    .035)
              (  17.356@

  NA1   =V10 =     .770*F2    +  1.000 E10
                   .051
                 15.210@
              (    .045)
              (  17.128@

  PA2   =V11 =     .639*F1    +  1.000 E11
                   .034
                 18.939@
              (    .037)
              (  17.125@

  NA2   =V12 =     .709*F2    +  1.000 E12
                   .044
                 16.081@
              (    .044)
              (  16.128@

  NA3   =V13 =     .848*F2    +  1.000 E13
                   .055
                 15.401@
              (    .044)
              (  19.225@

  NA4   =V14 =     .761*F2    +  1.000 E14
                   .046
                 16.473@
              (    .041)
              (  18.569@

  PA3   =V15 =     .681*F1    +  1.000 E15
                   .034
                 20.244@
              (    .035)
              (  19.355@

  PA4   =V16 =     .656*F1    +  1.000 E16
                   .031
                 21.121@
              (    .034)
              (  19.510@

  PA5   =V17 =     .703*F1    +  1.000 E17
                   .033
                 21.546@
              (    .033)
              (  21.444@

  NA5   =V18 =     .816*F2    +  1.000 E18
                   .052
                 15.770@
              (    .044)
              (  18.689@

  SAT1  =V44 =    1.252*F7    +  1.000 E44
                   .051
                 24.360@
              (    .059)
              (  21.353@

  SAT2  =V45 =    1.232*F7    +  1.000 E45
                   .047
                 25.987@
              (    .054)
              (  22.828@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


18-Jan-07      PAGE : 16  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SAT3  =V46 =    1.257*F7    +  1.000 E46
                   .052
                 24.348@
              (    .052)
              (  24.233@

ANGER1  =V55 =     .786*F3    +  1.000 E55
                   .052
```

```
                 15.044@
              (    .051)
              (  15.293@

ANGER2  =V56 =      .893*F3    +  1.000 E56
                   .044
                 20.175@
              (    .048)
              (  18.491@

ANGE3   =V57 =      .979*F3    +  1.000 E57
                   .044
                 22.181@
              (    .045)
              (  21.926@

ANGER4  =V58 =     1.027*F3    +  1.000 E58
                   .045
                 22.647@
              (    .045)
              (  23.061@

ANGER5  =V59 =      .931*F3    +  1.000 E59
                   .044
                 21.142@
              (    .053)
              (  17.685@

  GHQ1  =V61 =      .754*F4    +  1.000 E61
                   .051
                 14.729@
              (    .060)
              (  12.500@

  GHQ7  =V67 =      .991*F4    +  1.000 E67
                   .048
                 20.514@
              (    .044)
              (  22.657@

  GHQ8  =V68 =      .894*F4    +  1.000 E68
                   .046
                 19.287@
              (    .051)
              (  17.373@

  GHQ9  =V69 =      .914*F5    +  1.000 E69
                   .049
                 18.745@
              (    .046)
              (  19.957@

GHQ10   =V70 =      .948*F5    +  1.000 E70
                   .045
                 20.981@
              (    .042)
              (  22.389@

GHQ11   =V71 =      .909*F5    +  1.000 E71
                   .051
                 17.872@
              (    .054)
              (  16.872@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


18-Jan-07      PAGE : 17  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

GHQ12   =V72 =      .866*F4    +  1.000 E72
                   .047
                 18.363@
              (    .052)
              (  16.592@

WELLB1  =V73 =      .751*F6    +  1.000 E73
                   .033
                 22.823@
              (    .033)
              (  23.114@

WELLB2  =V74 =      .772*F6    +  1.000 E74
                   .032
                 24.015@
              (    .032)
              (  23.997@

WELLB3  =V75 =      .740*F6    +  1.000 E75
                   .033
                 22.346@
              (    .034)
              (  21.727@

WELLB4  =V76 =      .719*F6    +  1.000 E76
```

```
                   .035
                 20.418@
              (    .036)
              (  20.007@

WELLB5  =V77 =     .769*F6    +  1.000 E77
                   .037
                 20.638@
              (    .038)
              (  20.383@
```



```
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                 F
               ---                               ---
                              I F1  -   F1              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F2  -   F2              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F3  -   F3              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F4  -   F4              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F5  -   F5              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F6  -   F6              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F7  -   F7              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
```



```
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                E                                 D
               ---                               ---
E9  -  PA1              .254*I                               I
                        .029 I                               I
                       8.789@I                               I
                    (    .033)I                              I
                    (   7.721@I                              I
                             I                               I
E10 -  NA1              .569*I                               I
                        .069 I                               I
                       8.238@I                               I
                    (    .075)I                              I
                    (   7.595@I                              I
                             I                               I
E11 -  PA2              .203*I                               I
                        .024 I                               I
                       8.401@I                               I
                    (    .037)I                              I
                    (   5.479@I                              I
                             I                               I
E12 -  NA2              .427*I                               I
```

```
                           .053 I                                  I
                          8.025@I                                  I
                      (    .058)I                                  I
                      (   7.327@I                                  I
                                I                                  I
E13 -  NA3                 .826*I                                  I
                           .097 I                                  I
                          8.527@I                                  I
                      (    .104)I                                  I
                      (   7.971@I                                  I
                                I                                  I
E14 -  NA4                 .426*I                                  I
                           .055 I                                  I
                          7.728@I                                  I
                      (    .067)I                                  I
                      (   6.328@I                                  I
                                I                                  I
E15 -  PA3                 .168*I                                  I
                           .021 I                                  I
                          7.843@I                                  I
                      (    .027)I                                  I
                      (   6.250@I                                  I
                                I                                  I
E16 -  PA4                 .163*I                                  I
                           .020 I                                  I
                          7.938@I                                  I
                      (    .032)I                                  I
                      (   5.134@I                                  I
                                I                                  I
E17 -  PA5                 .149*I                                  I
                           .020 I                                  I
                          7.428@I                                  I
                      (    .024)I                                  I
                      (   6.164@I                                  I
                                I                                  I
E18 -  NA5                 .583*I                                  I
                           .072 I                                  I
                          8.080@I                                  I
                      (    .088)I                                  I
                      (   6.604@I                                  I
                                I                                  I
E44 -  SAT1                .206*I                                  I
                           .030 I                                  I
                          6.776@I                                  I
                      (    .071)I                                  I
                      (   2.918@I                                  I
                                I                                  I
E45 -  SAT2                .082*I                                  I
                           .023 I                                  I
                          3.635@I                                  I
                      (    .038)I                                  I
                      (   2.195@I                                  I
                                I                                  I

18-Jan-07      PAGE : 20  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E46 -  SAT3                .314*I                                  I
                           .039 I                                  I
                          8.032@I                                  I
                      (    .065)I                                  I
                      (   4.847@I                                  I
                                I                                  I
E55 -ANGER1                .738*I                                  I
                           .079 I                                  I
                          9.365@I                                  I
                      (    .133)I                                  I
                      (   5.559@I                                  I
                                I                                  I
E56 -ANGER2                .385*I                                  I
                           .045 I                                  I
                          8.600@I                                  I
                      (    .071)I                                  I
                      (   5.459@I                                  I
                                I                                  I
E57 -ANGE3                 .208*I                                  I
                           .030 I                                  I
                          6.963@I                                  I
                      (    .047)I                                  I
                      (   4.391@I                                  I
                                I                                  I
E58 -ANGER4                .229*I                                  I
                           .033 I                                  I
                          6.969@I                                  I
                      (    .049)I                                  I
                      (   4.692@I                                  I
                                I                                  I
E59 -ANGER5                .313*I                                  I
                           .038 I                                  I
                          8.155@I                                  I
                      (    .056)I                                  I
                      (   5.545@I                                  I
                                I                                  I
E61 -  GHQ1                .666*I                                  I
```

```
                          .076 I                                I
                         8.748@I                                I
                     (    .113)I                                I
                     (   5.888@I                                I
                               I                                I
E67 -  GHQ7               .438*I                                I
                          .064 I                                I
                         6.879@I                                I
                     (    .089)I                                I
                     (   4.910@I                                I
                               I                                I
E68 -  GHQ8               .411*I                                I
                          .057 I                                I
                         7.262@I                                I
                     (    .070)I                                I
                     (   5.915@I                                I
                               I                                I
E69 -  GHQ9               .544*I                                I
                          .070 I                                I
                         7.796@I                                I
                     (    .151)I                                I
                     (   3.602@I                                I
                               I                                I
E70 -GHQ10                .312*I                                I
                          .052 I                                I
                         5.965@I                                I
                     (    .087)I                                I
                     (   3.579@I                                I
                               I                                I
E71 -GHQ11                .477*I                                I
                          .064 I                                I
                         7.481@I                                I
                     (    .155)I                                I
                     (   3.086@I                                I
                               I                                I


18-Jan-07      PAGE : 21  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E72 -GHQ12                .421*I                                I
                          .056 I                                I
                         7.471@I                                I
                     (    .074)I                                I
                     (   5.668@I                                I
                               I                                I
E73 -WELLB1               .142*I                                I
                          .018 I                                I
                         7.830@I                                I
                     (    .039)I                                I
                     (   3.656@I                                I
                               I                                I
E74 -WELLB2               .092*I                                I
                          .014 I                                I
                         6.561@I                                I
                     (    .021)I                                I
                     (   4.465@I                                I
                               I                                I
E75 -WELLB3               .174*I                                I
                          .021 I                                I
                         8.275@I                                I
                     (    .040)I                                I
                     (   4.393@I                                I
                               I                                I
E76 -WELLB4               .227*I                                I
                          .026 I                                I
                         8.721@I                                I
                     (    .043)I                                I
                     (   5.275@I                                I
                               I                                I
E77 -WELLB5               .246*I                                I
                          .028 I                                I
                         8.655@I                                I
                     (    .059)I                                I
                     (   4.147@I                                I
                               I                                I


18-Jan-07      PAGE : 22  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                  F
               ---                                ---
                               I F2  -   F2              -.284*I
                               I F1  -   F1                .053 I
                               I                        -5.342@I
                               I                     (    .061)I
```

```
I                        (  -4.640@I
I                                  I
I F3  -   F3                -.359*I
I F1  -   F1                 .048 I
I                          -7.458@I
I                        (   .048)I
I                        (  -7.499@I
I                                  I
I F4  -   F4                -.206*I
I F1  -   F1                 .054 I
I                          -3.813@I
I                        (   .062)I
I                        (  -3.332@I
I                                  I
I F5  -   F5                -.285*I
I F1  -   F1                 .052 I
I                          -5.450@I
I                        (   .055)I
I                        (  -5.201@I
I                                  I
I F6  -   F6                 .717*I
I F1  -   F1                 .028 I
I                          25.445@I
I                        (   .033)I
I                        (  21.997@I
I                                  I
I F7  -   F7                 .229*I
I F1  -   F1                 .051 I
I                           4.488@I
I                        (   .056)I
I                        (   4.062@I
I                                  I
I F3  -   F3                 .401*I
I F2  -   F2                 .049 I
I                           8.220@I
I                        (   .048)I
I                        (   8.426@I
I                                  I
I F4  -   F4                -.029*I
I F2  -   F2                 .058 I
I                           -.503 I
I                        (   .066)I
I                        (   -.447)I
I                                  I
I F5  -   F5                 .325*I
I F2  -   F2                 .053 I
I                           6.088@I
I                        (   .054)I
I                        (   6.050@I
I                                  I
I F6  -   F6                -.353*I
I F2  -   F2                 .050 I
I                          -7.058@I
I                        (   .057)I
I                        (  -6.223@I
I                                  I
I F7  -   F7                 .073*I
I F2  -   F2                 .056 I
I                           1.319 I
I                        (   .057)I
I                        (   1.289)I
I                                  I
I F4  -   F4                 .025*I
I F3  -   F3                 .056 I
I                            .448 I
I                        (   .052)I
I                        (   .482)I
I                                  I
```


MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)

```
I F5  -   F5                 .701*I
I F3  -   F3                 .031 I
I                          22.272@I
I                        (   .037)I
I                        (  18.964@I
I                                  I
I F6  -   F6                -.300*I
I F3  -   F3                 .049 I
I                          -6.095@I
I                        (   .050)I
I                        (  -6.064@I
I                                  I
I F7  -   F7                -.198*I
I F3  -   F3                 .051 I
I                          -3.848@I
I                        (   .053)I
I                        (  -3.723@I
I                                  I
I F5  -   F5                 .128*I
I F4  -   F4                 .057 I
I                           2.255@I
I                        (   .061)I
```

```
                              I                      (   2.088@I
                              I                              I
                              I F6  -   F6              -.260*I
                              I F4  -   F4               .052 I
                              I                        -5.024@I
                              I                      (    .066)I
                              I                      (  -3.922@I
                              I                              I
                              I F7  -   F7              -.463*I
                              I F4  -   F4               .044 I
                              I                       -10.522@I
                              I                      (    .045)I
                              I                      ( -10.241@I
                              I                              I
                              I F6  -   F6              -.265*I
                              I F5  -   F5               .052 I
                              I                        -5.085@I
                              I                      (    .054)I
                              I                      (  -4.869@I
                              I                              I
                              I F7  -   F7              -.284*I
                              I F5  -   F5               .051 I
                              I                        -5.569@I
                              I                      (    .049)I
                              I                      (  -5.763@I
                              I                              I
                              I F7  -   F7               .251*I
                              I F6  -   F6               .050 I
                              I                         5.053@I
                              I                      (    .054)I
                              I                      (   4.653@I
                              I                              I
```



```
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 STANDARDIZED SOLUTION:                                              R-SQUARED



  PA1   =V9  =   .773*F1    + .635 E9                                    .597
  NA1   =V10 =   .714*F2    + .700 E10                                   .510
  PA2   =V11 =   .817*F1    + .576 E11                                   .668
  NA2   =V12 =   .735*F2    + .678 E12                                   .541
  NA3   =V13 =   .682*F2    + .731 E13                                   .465
  NA4   =V14 =   .759*F2    + .651 E14                                   .576
  PA3   =V15 =   .857*F1    + .516 E15                                   .734
  PA4   =V16 =   .852*F1    + .524 E16                                   .726
  PA5   =V17 =   .877*F1    + .481 E17                                   .769
  NA5   =V18 =   .730*F2    + .683 E18                                   .533
  SAT1  =V44 =   .940*F7    + .341 E44                                   .884
  SAT2  =V45 =   .974*F7    + .227 E45                                   .949
  SAT3  =V46 =   .913*F7    + .407 E46                                   .834
ANGER1  =V55 =   .675*F3    + .738 E55                                   .455
ANGER2  =V56 =   .821*F3    + .571 E56                                   .674
ANGE3   =V57 =   .906*F3    + .422 E57                                   .822
ANGER4  =V58 =   .906*F3    + .422 E58                                   .822
ANGER5  =V59 =   .857*F3    + .515 E59                                   .734
  GHQ1  =V61 =   .679*F4    + .734 E61                                   .461
  GHQ7  =V67 =   .831*F4    + .556 E67                                   .691
  GHQ8  =V68 =   .813*F4    + .583 E68                                   .660
  GHQ9  =V69 =   .778*F5    + .628 E69                                   .606
GHQ10   =V70 =   .862*F5    + .508 E70                                   .742
GHQ11   =V71 =   .796*F5    + .605 E71                                   .634
GHQ12   =V72 =   .801*F4    + .599 E72                                   .641
WELLB1  =V73 =   .894*F6    + .448 E73                                   .799
WELLB2  =V74 =   .931*F6    + .366 E74                                   .866
WELLB3  =V75 =   .871*F6    + .491 E75                                   .759
WELLB4  =V76 =   .834*F6    + .552 E76                                   .695
WELLB5  =V77 =   .840*F6    + .542 E77                                   .706
```



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 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

                V                              F
               ---                            ---
                              I F2  -   F2              -.284*I
                              I F1  -   F1                   I
                              I                              I
                              I F3  -   F3              -.359*I
                              I F1  -   F1                   I
                              I                              I
                              I F4  -   F4              -.206*I
                              I F1  -   F1                   I
                              I                              I
                              I F5  -   F5              -.285*I
                              I F1  -   F1                   I
                              I                              I
```

```
                              I F6  -   F6               .717*I
                              I F1  -   F1                   I
                              I                              I
                              I F7  -   F7               .229*I
                              I F1  -   F1                   I
                              I                              I
                              I F3  -   F3               .401*I
                              I F2  -   F2                   I
                              I                              I
                              I F4  -   F4              -.029*I
                              I F2  -   F2                   I
                              I                              I
                              I F5  -   F5               .325*I
                              I F2  -   F2                   I
                              I                              I
                              I F6  -   F6              -.353*I
                              I F2  -   F2                   I
                              I                              I
                              I F7  -   F7               .073*I
                              I F2  -   F2                   I
                              I                              I
                              I F4  -   F4               .025*I
                              I F3  -   F3                   I
                              I                              I
                              I F5  -   F5               .701*I
                              I F3  -   F3                   I
                              I                              I
                              I F6  -   F6              -.300*I
                              I F3  -   F3                   I
                              I                              I
                              I F7  -   F7              -.198*I
                              I F3  -   F3                   I
                              I                              I
                              I F5  -   F5               .128*I
                              I F4  -   F4                   I
                              I                              I

18-Jan-07      PAGE : 26  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 1)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

                              I F6  -   F6              -.260*I
                              I F4  -   F4                   I
                              I                              I
                              I F7  -   F7              -.463*I
                              I F4  -   F4                   I
                              I                              I
                              I F6  -   F6              -.265*I
                              I F5  -   F5                   I
                              I                              I
                              I F7  -   F7              -.284*I
                              I F5  -   F5                   I
                              I                              I
                              I F7  -   F7               .251*I
                              I F6  -   F6                   I
                              I                              I

-------------------------------------------------------------------------------
                          E N D   O F   M E T H O D
-------------------------------------------------------------------------------

18-Jan-07      PAGE : 27  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                    =      .685
 COEFFICIENT ALPHA FOR AN OPTIMAL SHORT SCALE                =      .963
 BASED ON THE FOLLOWING  8 VARIABLES
 ANGER1    ANGER2    ANGE3     ANGER4    ANGER5      GHQ9
 GHQ10     GHQ11
 RELIABILITY COEFFICIENT RHO         =      .900
 GREATEST LOWER BOUND RELIABILITY                            =      .955
 GLB RELIABILITY FOR AN OPTIMAL SHORT SCALE                  =      .956
 BASED ON 27 VARIABLES, ALL EXCEPT:
   PA2       NA5       GHQ1
 BENTLER'S DIMENSION-FREE LOWER BOUND RELIABILITY            =      .955
 SHAPIRO'S LOWER BOUND RELIABILITY FOR A WEIGHTED COMPOSITE  =      .768
 WEIGHTS THAT ACHIEVE SHAPIRO'S LOWER BOUND:
   PA1       NA1       PA2       NA2       NA3       NA4
    -.202     -.792      .024      .191      .435     -.016
   PA3       PA4       PA5       NA5       SAT1      SAT2
    -.007     -.006     -.007     -.046      .076      .071
```

SAT3	ANGER1	ANGER2	ANGE3	ANGER4	ANGER5
.078	.074	.066	.078	.071	.062
GHQ1	GHQ7	GHQ8	GHQ9	GHQ10	GHQ11
-.120	-.118	-.103	.049	.056	.059
GHQ12	WELLB1	WELLB2	WELLB3	WELLB4	WELLB5
-.108	.016	.026	.010	.013	.004

PARAMETER ESTIMATES APPEAR IN ORDER,
NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.

ALL EQUALITY CONSTRAINTS WERE CORRECTLY IMPOSED

RESIDUAL COVARIANCE MATRIX (S-SIGMA) :

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	-.035				
NA1	V 10	-.034	.032			
PA2	V 11	.004	-.047	-.064		
NA2	V 12	-.117	-.037	-.078	.012	
NA3	V 13	-.087	.235	-.055	.033	.100
NA4	V 14	-.069	-.050	-.081	.068	.005
PA3	V 15	-.059	-.002	-.094	-.100	-.003
PA4	V 16	-.080	.034	-.065	-.068	.022
PA5	V 17	-.069	-.009	-.071	-.058	-.051
NA5	V 18	-.003	.014	.008	-.023	.030
SAT1	V 44	.082	-.029	.023	-.080	-.093
SAT2	V 45	-.006	-.090	-.037	-.057	-.037
SAT3	V 46	-.003	-.027	-.039	-.081	.005
ANGER1	V 55	.157	.024	.131	.108	.068
ANGER2	V 56	.094	-.049	.086	.003	-.034
ANGE3	V 57	.125	-.027	.129	.088	-.020
ANGER4	V 58	.104	-.075	.087	-.001	-.049
ANGER5	V 59	.088	-.140	.039	.023	-.076
GHQ1	V 61	-.104	-.010	.059	.113	.167
GHQ7	V 67	.013	-.069	.011	.079	-.005
GHQ8	V 68	-.041	-.163	.018	.015	-.149
GHQ9	V 69	.039	.054	.054	.095	.033
GHQ10	V 70	.127	.037	.099	.054	-.061
GHQ11	V 71	.055	.005	.105	-.033	-.083
GHQ12	V 72	-.040	-.058	.028	.059	-.073
WELLB1	V 73	.053	-.047	-.054	-.142	-.032
WELLB2	V 74	.056	-.008	-.048	-.081	.007
WELLB3	V 75	.044	-.019	-.031	-.044	.051
WELLB4	V 76	.095	-.035	-.034	-.079	-.033
WELLB5	V 77	.040	-.033	-.019	-.117	.016

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	.017				
PA3	V 15	-.013	-.104			
PA4	V 16	-.043	-.064	-.052		
PA5	V 17	-.008	-.117	-.049	-.081	
NA5	V 18	.027	.004	-.007	-.024	-.011
SAT1	V 44	-.042	-.019	.052	.036	.041
SAT2	V 45	-.054	-.034	-.005	.001	.003
SAT3	V 46	-.058	-.033	.001	-.008	.035
ANGER1	V 55	.038	.043	.061	.005	.014
ANGER2	V 56	.068	.023	-.023	-.025	.008
ANGE3	V 57	.095	.122	.057	.026	.085
ANGER4	V 58	.155	.112	.011	-.009	.056
ANGER5	V 59	.085	-.001	-.073	-.070	-.029
GHQ1	V 61	.080	.012	.037	.044	.089
GHQ7	V 67	.067	-.002	.007	.026	.128
GHQ8	V 68	-.007	-.040	-.021	.051	.076
GHQ9	V 69	.153	.045	-.032	-.022	.034
GHQ10	V 70	.059	.043	.014	.012	-.019
GHQ11	V 71	.064	.086	-.001	-.029	.094
GHQ12	V 72	.084	.047	-.009	.032	.116
WELLB1	V 73	-.058	-.016	-.062	-.068	.007
WELLB2	V 74	-.079	-.021	-.060	-.058	.015
WELLB3	V 75	.024	-.038	-.052	-.049	.052
WELLB4	V 76	.005	-.002	-.036	.012	-.017
WELLB5	V 77	.003	.000	-.040	-.033	.016

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	.046				
SAT2	V 45	.005	-.037			
SAT3	V 46	.030	-.014	.014		
ANGER1	V 55	.131	.126	.118	.013	
ANGER2	V 56	.036	.010	.034	.134	.036
ANGE3	V 57	.045	.057	.030	.048	-.018
ANGER4	V 58	-.057	.003	-.050	-.087	-.009
ANGER5	V 59	-.114	-.079	-.094	.020	.110
GHQ1	V 61	-.093	-.046	-.069	-.228	-.017
GHQ7	V 67	-.183	-.158	-.215	-.210	.020
GHQ8	V 68	.012	.015	-.033	-.257	-.082
GHQ9	V 69	-.161	-.100	-.123	.011	.033
GHQ10	V 70	.057	.029	.049	-.008	-.032
GHQ11	V 71	.070	.078	.103	.036	.038
GHQ12	V 72	.063	.048	-.006	-.186	.031
WELLB1	V 73	.073	.035	.058	.032	.017
WELLB2	V 74	.171	.154	.176	.091	.052
WELLB3	V 75	.089	.032	.081	.061	.056
WELLB4	V 76	.165	.102	.146	.034	.007

WELLB5	V 77	.106	.051	.125	.069	.053

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	.038				
ANGER4	V 58	.126	.037			
ANGER5	V 59	.001	.048	.057		
GHQ1	V 61	-.096	-.069	-.027	.065	
GHQ7	V 67	-.038	.003	.054	.081	.054
GHQ8	V 68	-.122	-.086	-.003	.004	.006
GHQ9	V 69	-.009	-.001	-.010	.012	.076
GHQ10	V 70	-.089	-.056	-.056	-.064	-.059
GHQ11	V 71	.008	.031	.011	.001	-.118
GHQ12	V 72	.070	.065	.075	.044	.006
WELLB1	V 73	.047	.021	.011	-.102	-.011
WELLB2	V 74	.095	.027	.026	-.127	-.065
WELLB3	V 75	.088	.009	.032	-.024	.041
WELLB4	V 76	-.006	-.059	-.044	-.092	-.059
WELLB5	V 77	.040	.008	-.002	.004	.013

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	-.023				
GHQ9	V 69	-.123	.016			
GHQ10	V 70	-.121	-.011	-.040		
GHQ11	V 71	-.026	.007	.020	.038	
GHQ12	V 72	.007	.003	-.063	.031	-.008
WELLB1	V 73	.023	-.055	-.052	-.031	-.060
WELLB2	V 74	-.044	-.051	-.014	.001	-.088
WELLB3	V 75	.060	-.022	.000	.055	-.023
WELLB4	V 76	.005	-.061	.019	-.030	-.069
WELLB5	V 77	.036	.004	.046	.090	-.031

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.040				
WELLB2	V 74	.053	.028			
WELLB3	V 75	.038	.022	.032		
WELLB4	V 76	.024	.041	.039	.050	
WELLB5	V 77	.025	.009	.065	.074	.040

AVERAGE ABSOLUTE COVARIANCE RESIDUALS = .0526
AVERAGE OFF-DIAGONAL ABSOLUTE COVARIANCE RESIDUALS = .0534

TITLE: Measurement Model of Wellness (Sample 2)

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		PA1 V 9	NA1 V 10	PA2 V 11	NA2 V 12	NA3 V 13
PA1	V 9	-.051				
NA1	V 10	-.037	.026			
PA2	V 11	.006	-.057	-.112		
NA2	V 12	-.149	-.035	-.108	.013	
NA3	V 13	-.089	.183	-.062	.030	.073
NA4	V 14	-.082	-.045	-.105	.071	.004
PA3	V 15	-.095	-.002	-.165	-.140	-.003
PA4	V 16	-.136	.044	-.120	-.101	.026
PA5	V 17	-.112	-.011	-.126	-.082	-.058
NA5	V 18	-.003	.011	.009	-.022	.023
SAT1	V 44	.073	-.019	.022	-.062	-.058
SAT2	V 45	-.005	-.065	-.038	-.047	-.025
SAT3	V 46	-.002	-.019	-.039	-.064	.003
ANGER1	V 55	.167	.020	.152	.100	.051
ANGER2	V 56	.107	-.042	.107	.003	-.027
ANGE3	V 57	.133	-.022	.149	.081	-.015
ANGER4	V 58	.108	-.059	.098	-.001	-.036
ANGER5	V 59	.097	-.117	.047	.022	-.060
GHQ1	V 61	-.112	-.008	.070	.106	.128
GHQ7	V 67	.014	-.056	.013	.073	-.004
GHQ8	V 68	-.047	-.142	.023	.015	-.122
GHQ9	V 69	.043	.045	.065	.092	.026
GHQ10	V 70	.148	.032	.127	.055	-.050
GHQ11	V 71	.057	.004	.119	-.030	-.061
GHQ12	V 72	-.045	-.049	.034	.059	-.058
WELLB1	V 73	.075	-.050	-.083	-.175	-.032
WELLB2	V 74	.080	-.009	-.075	-.100	.007
WELLB3	V 75	.063	-.020	-.049	-.055	.052
WELLB4	V 76	.131	-.036	-.051	-.095	-.032
WELLB5	V 77	.053	-.033	-.028	-.134	.015

		NA4 V 14	PA3 V 15	PA4 V 16	PA5 V 17	NA5 V 18
NA4	V 14	.017				
PA3	V 15	-.017	-.182			
PA4	V 16	-.059	-.120	-.104		
PA5	V 17	-.010	-.207	-.092	-.146	
NA5	V 18	.024	.005	-.009	-.029	-.009

SAT1	V 44	-.030	-.018	.054	.035	.027
SAT2	V 45	-.042	-.036	-.006	.001	.002
SAT3	V 46	-.043	-.033	.001	-.008	.024
ANGER1	V 55	.033	.050	.075	.006	.011
ANGER2	V 56	.063	.029	-.030	-.031	.007
ANGE3	V 57	.081	.141	.070	.030	.067
ANGER4	V 58	.131	.128	.013	-.011	.044
ANGER5	V 59	.076	-.001	-.095	-.085	-.024
GHQ1	V 61	.070	.014	.047	.053	.072
GHQ7	V 67	.058	-.002	.009	.031	.102
GHQ8	V 68	-.007	-.050	-.029	.066	.066
GHQ9	V 69	.139	.054	-.041	-.027	.028
GHQ10	V 70	.056	.055	.019	.015	-.017
GHQ11	V 71	.053	.097	-.001	-.033	.073
GHQ12	V 72	.077	.059	-.012	.040	.099
WELLB1	V 73	-.067	-.025	-.104	-.107	.007
WELLB2	V 74	-.091	-.032	-.101	-.091	.016
WELLB3	V 75	.028	-.060	-.088	-.078	.056
WELLB4	V 76	.005	-.003	-.058	.019	-.018
WELLB5	V 77	.003	.000	-.061	-.048	.015

		SAT1 V 44	SAT2 V 45	SAT3 V 46	ANGER1 V 55	ANGER2 V 56
SAT1	V 44	.025				
SAT2	V 45	.003	-.023			
SAT3	V 46	.017	-.008	.008		
ANGER1	V 55	.084	.088	.078	.010	
ANGER2	V 56	.025	.007	.024	.111	.032
ANGE3	V 57	.029	.040	.020	.037	-.015
ANGER4	V 58	-.036	.002	-.032	-.066	-.008
ANGER5	V 59	-.076	-.057	-.065	.016	.095
GHQ1	V 61	-.061	-.032	-.047	-.179	-.014
GHQ7	V 67	-.119	-.110	-.143	-.163	.016
GHQ8	V 68	.008	.012	-.024	-.216	-.074
GHQ9	V 69	-.109	-.073	-.085	.009	.029
GHQ10	V 70	.041	.022	.035	-.007	-.029
GHQ11	V 71	.044	.052	.066	.027	.031
GHQ12	V 72	.043	.035	-.004	-.153	.028
WELLB1	V 73	.063	.033	.052	.033	.019
WELLB2	V 74	.148	.143	.156	.095	.058
WELLB3	V 75	.078	.031	.073	.064	.063
WELLB4	V 76	.138	.092	.125	.034	.008
WELLB5	V 77	.085	.043	.102	.066	.055

		ANGE3 V 57	ANGER4 V 58	ANGER5 V 59	GHQ1 V 61	GHQ7 V 67
ANGE3	V 57	.029				
ANGER4	V 58	.095	.027			
ANGER5	V 59	.001	.038	.048		
GHQ1	V 61	-.075	-.054	-.022	.052	
GHQ7	V 67	-.030	.002	.044	.064	.042
GHQ8	V 68	-.102	-.071	-.002	.003	.005
GHQ9	V 69	-.007	-.001	-.008	.010	.061
GHQ10	V 70	-.075	-.047	-.050	-.056	-.051
GHQ11	V 71	.006	.023	.008	.001	-.089
GHQ12	V 72	.057	.052	.065	.037	.005
WELLB1	V 73	.049	.021	.012	-.108	-.011
WELLB2	V 74	.098	.027	.028	-.134	-.068
WELLB3	V 75	.092	.009	.035	-.026	.043
WELLB4	V 76	-.006	-.058	-.046	-.094	-.060
WELLB5	V 77	.038	.008	-.002	.004	.013

		GHQ8 V 68	GHQ9 V 69	GHQ10 V 70	GHQ11 V 71	GHQ12 V 72
GHQ8	V 68	-.021				
GHQ9	V 69	-.109	.014			
GHQ10	V 70	-.112	-.010	-.037		
GHQ11	V 71	-.021	.006	.016	.028	
GHQ12	V 72	.006	.002	-.057	.025	-.007
WELLB1	V 73	.026	-.060	-.059	-.031	-.067
WELLB2	V 74	-.049	-.055	-.016	.001	-.097
WELLB3	V 75	.068	-.024	.000	.056	-.026
WELLB4	V 76	.006	-.064	.022	-.029	-.074
WELLB5	V 77	.038	.004	.049	.083	-.031

		WELLB1 V 73	WELLB2 V 74	WELLB3 V 75	WELLB4 V 76	WELLB5 V 77
WELLB1	V 73	.055				
WELLB2	V 74	.073	.039			
WELLB3	V 75	.053	.031	.046		
WELLB4	V 76	.033	.056	.054	.066	
WELLB5	V 77	.032	.012	.085	.093	.047

AVERAGE ABSOLUTE STANDARDIZED RESIDUALS = .0522
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUALS = .0526

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V68, V55	-.216	11	V72, V55	-.153
2	V17, V15	-.207	12	V55, V11	.152
3	V13, V10	.183	13	V12, V9	-.149
4	V15, V15	-.182	14	V57, V11	.149
5	V61, V55	-.179	15	V70, V9	.148
6	V73, V12	-.175	16	V74, V44	.148

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      7     V55, V9         .167      17     V17, V17       -.146
      8     V15, V11       -.165      18     V74, V45        .143
      9     V67, V55       -.163      19     V67, V46       -.143
     10     V74, V46        .156      20     V68, V10       -.142

18-Jan-07      PAGE : 29  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 DISTRIBUTION OF STANDARDIZED RESIDUALS


    ----------------------------------------
    !                                      !
 240-                                      -
    !                  *                   !
    !                  *                   !
    !                  *                   !
    !                  *                   !           RANGE      FREQ PERCENT
 180-                  *                   -
    !               *  *                   !    1   -0.5  -  --       0    .00%
    !               *  *                   !    2   -0.4  -  -0.5     0    .00%
    !               *  *                   !    3   -0.3  -  -0.4     0    .00%
    !               *  *                   !    4   -0.2  -  -0.3     2    .43%
 120-               *  *                   -    5   -0.1  -  -0.2    37   7.96%
    !               *  *                   !    6    0.0  -  -0.1   171  36.77%
    !               *  *                   !    7    0.1  -   0.0   229  49.25%
    !               *  *                   !    8    0.2  -   0.1    26   5.59%
    !               *  *                   !    9    0.3  -   0.2     0    .00%
  60-               *  *                   -    A    0.4  -   0.3     0    .00%
    !               *  *                   !    B    0.5  -   0.4     0    .00%
    !            *  *  *                   !    C     ++  -   0.5     0    .00%
    !            *  *  *  *                !    -------------------------------
    !            *  *  *  *                !            TOTAL       465 100.00%
    ----------------------------------------
       1  2  3  4  5  6  7  8  9  A  B  C      EACH "*" REPRESENTS 12 RESIDUALS

18-Jan-07      PAGE : 30  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


  PA1   =V9  =     .614*F1    + 1.000 E9
                   .036
                 16.962@
              (    .035)
              (  17.356@

  NA1   =V10 =     .770*F2    + 1.000 E10
                   .051
                 15.210@
              (    .045)
              (  17.128@

  PA2   =V11 =     .639*F1    + 1.000 E11
                   .034
                 18.939@
              (    .037)
              (  17.125@

  NA2   =V12 =     .709*F2    + 1.000 E12
                   .044
                 16.081@
              (    .044)
              (  16.128@

  NA3   =V13 =     .848*F2    + 1.000 E13
                   .055
                 15.401@
              (    .044)
              (  19.225@

  NA4   =V14 =     .761*F2    + 1.000 E14
                   .046
                 16.473@
              (    .041)
              (  18.569@

  PA3   =V15 =     .681*F1    + 1.000 E15
                   .034
                 20.244@
              (    .035)
              (  19.355@

  PA4   =V16 =     .656*F1    + 1.000 E16
```

```
                  .031
                21.121@
             (    .034)
             (  19.510@

  PA5   =V17 =     .703*F1    +  1.000 E17
                  .033
                21.546@
             (    .033)
             (  21.444@

  NA5   =V18 =     .816*F2    +  1.000 E18
                  .052
                15.770@
             (    .044)
             (  18.689@

  SAT1  =V44 =    1.252*F7    +  1.000 E44
                  .051
                24.360@
             (    .059)
             (  21.353@

  SAT2  =V45 =    1.232*F7    +  1.000 E45
                  .047
                25.987@
             (    .054)
             (  22.828@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)
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 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SAT3  =V46 =    1.257*F7    +  1.000 E46
                  .052
                24.348@
             (    .052)
             (  24.233@

ANGER1  =V55 =     .786*F3    +  1.000 E55
                  .052
                15.044@
             (    .051)
             (  15.293@

ANGER2  =V56 =     .893*F3    +  1.000 E56
                  .044
                20.175@
             (    .048)
             (  18.491@

ANGE3   =V57 =     .979*F3    +  1.000 E57
                  .044
                22.181@
             (    .045)
             (  21.926@

ANGER4  =V58 =    1.027*F3    +  1.000 E58
                  .045
                22.647@
             (    .045)
             (  23.061@

ANGER5  =V59 =     .931*F3    +  1.000 E59
                  .044
                21.142@
             (    .053)
             (  17.685@

  GHQ1  =V61 =     .754*F4    +  1.000 E61
                  .051
                14.729@
             (    .060)
             (  12.500@

  GHQ7  =V67 =     .991*F4    +  1.000 E67
                  .048
                20.514@
             (    .044)
             (  22.657@

  GHQ8  =V68 =     .894*F4    +  1.000 E68
                  .046
                19.287@
             (    .051)
             (  17.373@

  GHQ9  =V69 =     .914*F5    +  1.000 E69
                  .049
                18.745@
             (    .046)
             (  19.957@
```

```
GHQ10   =V70 =      .948*F5    +  1.000 E70
                    .045
                  20.981@
               (    .042)
               (  22.389@

GHQ11   =V71 =      .909*F5    +  1.000 E71
                    .051
                  17.872@
               (    .054)
               (  16.872@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


18-Jan-07      PAGE : 32  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

GHQ12   =V72 =      .866*F4    +  1.000 E72
                    .047
                  18.363@
               (    .052)
               (  16.592@

WELLB1  =V73 =      .751*F6    +  1.000 E73
                    .033
                  22.823@
               (    .033)
               (  23.114@

WELLB2  =V74 =      .772*F6    +  1.000 E74
                    .032
                  24.015@
               (    .032)
               (  23.997@

WELLB3  =V75 =      .740*F6    +  1.000 E75
                    .033
                  22.346@
               (    .034)
               (  21.727@

WELLB4  =V76 =      .719*F6    +  1.000 E76
                    .035
                  20.418@
               (    .036)
               (  20.007@

WELLB5  =V77 =      .769*F6    +  1.000 E77
                    .037
                  20.638@
               (    .038)
               (  20.383@


18-Jan-07      PAGE : 33  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                  V                                 F
                 ---                               ---
                                I F1  -   F1              1.000 I
                                I                               I
                                I                               I
                                I                               I
                                I                               I
                                I                               I
                                I F2  -   F2              1.000 I
                                I                               I
                                I                               I
                                I                               I
                                I                               I
                                I                               I
                                I F3  -   F3              1.000 I
                                I                               I
                                I                               I
                                I                               I
                                I                               I
                                I                               I
                                I F4  -   F4              1.000 I
                                I                               I
                                I                               I
                                I                               I
                                I                               I
                                I                               I
                                I F5  -   F5              1.000 I
                                I                               I
```

```
                         I                                 I
                         I                                 I
                         I                                 I
                         I                                 I
                         I F6  -   F6              1.000 I
                         I                                 I
                         I                                 I
                         I                                 I
                         I                                 I
                         I                                 I
                         I F7  -   F7              1.000 I
                         I                                 I
                         I                                 I
                         I                                 I
                         I                                 I
                         I                                 I
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18-Jan-07      PAGE : 34  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 E                               D
                ---                             ---
E9  -  PA1              .346*I                                 I
                        .038 I                                 I
                       9.023@I                                 I
                  (     .052)I                                 I
                  (    6.589@I                                 I
                             I                                 I
E10 -  NA1              .574*I                                 I
                        .069 I                                 I
                       8.334@I                                 I
                  (     .083)I                                 I
                  (    6.956@I                                 I
                             I                                 I
E11 -  PA2              .231*I                                 I
                        .027 I                                 I
                       8.512@I                                 I
                  (     .037)I                                 I
                  (    6.313@I                                 I
                             I                                 I
E12 -  NA2              .389*I                                 I
                        .049 I                                 I
                       7.947@I                                 I
                  (     .058)I                                 I
                  (    6.740@I                                 I
                             I                                 I
E13 -  NA3              .555*I                                 I
                        .070 I                                 I
                       7.922@I                                 I
                  (     .092)I                                 I
                  (    6.001@I                                 I
                             I                                 I
E14 -  NA4              .441*I                                 I
                        .056 I                                 I
                       7.917@I                                 I
                  (     .064)I                                 I
                  (    6.941@I                                 I
                             I                                 I
E15 -  PA3              .209*I                                 I
                        .026 I                                 I
                       8.172@I                                 I
                  (     .040)I                                 I
                  (    5.244@I                                 I
                             I                                 I
E16 -  PA4              .125*I                                 I
                        .017 I                                 I
                       7.223@I                                 I
                  (     .020)I                                 I
                  (    6.163@I                                 I
                             I                                 I
E17 -  PA5              .146*I                                 I
                        .020 I                                 I
                       7.279@I                                 I
                  (     .025)I                                 I
                  (    5.781@I                                 I
                             I                                 I
E18 -  NA5              .566*I                                 I
                        .070 I                                 I
                       8.117@I                                 I
                  (     .098)I                                 I
                  (    5.798@I                                 I
                             I                                 I
E44 -  SAT1             .248*I                                 I
                        .033 I                                 I
                       7.513@I                                 I
                  (     .063)I                                 I
                  (    3.959@I                                 I
                             I                                 I
E45 -  SAT2             .117*I                                 I
                        .023 I                                 I
                       5.014@I                                 I
                  (     .042)I                                 I
                  (    2.758@I                                 I
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                               I                               I

18-Jan-07      PAGE : 35  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E46 -  SAT3              .173*I                               I
                          .028 I                               I
                         6.280@I                               I
                     (    .054)I                               I
                     (   3.200@I                               I
                               I                               I
E55 -ANGER1               .664*I                               I
                          .072 I                               I
                         9.232@I                               I
                     (    .092)I                               I
                     (   7.182@I                               I
                               I                               I
E56 -ANGER2               .290*I                               I
                          .036 I                               I
                         8.044@I                               I
                     (    .057)I                               I
                     (   5.051@I                               I
                               I                               I
E57 -ANGE3                .306*I                               I
                          .039 I                               I
                         7.805@I                               I
                     (    .056)I                               I
                     (   5.502@I                               I
                               I                               I
E58 -ANGER4               .258*I                               I
                          .036 I                               I
                         7.173@I                               I
                     (    .059)I                               I
                     (   4.343@I                               I
                               I                               I
E59 -ANGER5               .272*I                               I
                          .035 I                               I
                         7.755@I                               I
                     (    .050)I                               I
                     (   5.422@I                               I
                               I                               I
E61 -  GHQ1               .612*I                               I
                          .069 I                               I
                         8.894@I                               I
                     (    .097)I                               I
                     (   6.338@I                               I
                               I                               I
E67 -  GHQ7               .249*I                               I
                          .044 I                               I
                         5.722@I                               I
                     (    .065)I                               I
                     (   3.812@I                               I
                               I                               I
E68 -  GHQ8               .313*I                               I
                          .044 I                               I
                         7.113@I                               I
                     (    .094)I                               I
                     (   3.316@I                               I
                               I                               I
E69 -  GHQ9               .328*I                               I
                          .047 I                               I
                         6.959@I                               I
                     (    .061)I                               I
                     (   5.332@I                               I
                               I                               I
E70 -GHQ10                .211*I                               I
                          .040 I                               I
                         5.252@I                               I
                     (    .062)I                               I
                     (   3.405@I                               I
                               I                               I
E71 -GHQ11                .509*I                               I
                          .063 I                               I
                         8.101@I                               I
                     (    .147)I                               I
                     (   3.461@I                               I
                               I                               I

18-Jan-07      PAGE : 36  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E72 -GHQ12                .398*I                               I
                          .051 I                               I
                         7.876@I                               I
                     (    .071)I                               I
                     (   5.576@I                               I
```

```
                              I                                I
E73 -WELLB1              .118*I                                I
                         .015 I                                I
                        7.670@I                                I
                     (    .021)I                               I
                     (   5.540@I                               I
                              I                                I
E74 -WELLB2              .097*I                                I
                         .014 I                                I
                        7.059@I                                I
                     (    .023)I                               I
                     (   4.176@I                               I
                              I                                I
E75 -WELLB3              .118*I                                I
                         .015 I                                I
                        7.744@I                                I
                     (    .024)I                               I
                     (   4.959@I                               I
                              I                                I
E76 -WELLB4              .195*I                                I
                         .023 I                                I
                        8.650@I                                I
                     (    .033)I                               I
                     (   5.862@I                               I
                              I                                I
E77 -WELLB5              .214*I                                I
                         .025 I                                I
                        8.600@I                                I
                     (    .038)I                               I
                     (   5.617@I                               I
                              I                                I
```

```
18-Jan-07      PAGE : 37  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                 F
               ---                               ---
                              I F2  -   F2              -.284*I
                              I F1  -   F1               .053 I
                              I                        -5.342@I
                              I                     (    .061)I
                              I                     (  -4.640@I
                              I                               I
                              I F3  -   F3              -.359*I
                              I F1  -   F1               .048 I
                              I                        -7.458@I
                              I                     (    .048)I
                              I                     (  -7.499@I
                              I                               I
                              I F4  -   F4              -.206*I
                              I F1  -   F1               .054 I
                              I                        -3.813@I
                              I                     (    .062)I
                              I                     (  -3.332@I
                              I                               I
                              I F5  -   F5              -.285*I
                              I F1  -   F1               .052 I
                              I                        -5.450@I
                              I                     (    .055)I
                              I                     (  -5.201@I
                              I                               I
                              I F6  -   F6               .717*I
                              I F1  -   F1               .028 I
                              I                        25.445@I
                              I                     (    .033)I
                              I                     (  21.997@I
                              I                               I
                              I F7  -   F7               .229*I
                              I F1  -   F1               .051 I
                              I                         4.488@I
                              I                     (    .056)I
                              I                     (   4.062@I
                              I                               I
                              I F3  -   F3               .401*I
                              I F2  -   F2               .049 I
                              I                         8.220@I
                              I                     (    .048)I
                              I                     (   8.426@I
                              I                               I
                              I F4  -   F4              -.029*I
                              I F2  -   F2               .058 I
                              I                         -.503 I
                              I                     (    .066)I
                              I                     (   -.447)I
                              I                               I
                              I F5  -   F5               .325*I
                              I F2  -   F2               .053 I
                              I                         6.088@I
                              I                     (    .054)I
                              I                     (   6.050@I
                              I                               I
                              I F6  -   F6              -.353*I
                              I F2  -   F2               .050 I
```

```
                              I                        -7.058@I
                              I                      (    .057)I
                              I                      (  -6.223@I
                              I                                I
                              I F7  -   F7                .073*I
                              I F2  -   F2                .056 I
                              I                          1.319 I
                              I                      (    .057)I
                              I                      (   1.289)I
                              I                                I
                              I F4  -   F4                .025*I
                              I F3  -   F3                .056 I
                              I                           .448 I
                              I                      (    .052)I
                              I                      (    .482)I
                              I                                I
```



```
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

                              I F5  -   F5                .701*I
                              I F3  -   F3                .031 I
                              I                         22.272@I
                              I                      (    .037)I
                              I                      (  18.964@I
                              I                                I
                              I F6  -   F6               -.300*I
                              I F3  -   F3                .049 I
                              I                         -6.095@I
                              I                      (    .050)I
                              I                      (  -6.064@I
                              I                                I
                              I F7  -   F7               -.198*I
                              I F3  -   F3                .051 I
                              I                         -3.848@I
                              I                      (    .053)I
                              I                      (  -3.723@I
                              I                                I
                              I F5  -   F5                .128*I
                              I F4  -   F4                .057 I
                              I                          2.255@I
                              I                      (    .061)I
                              I                      (   2.088@I
                              I                                I
                              I F6  -   F6               -.260*I
                              I F4  -   F4                .052 I
                              I                         -5.024@I
                              I                      (    .066)I
                              I                      (  -3.922@I
                              I                                I
                              I F7  -   F7               -.463*I
                              I F4  -   F4                .044 I
                              I                        -10.522@I
                              I                      (    .045)I
                              I                      ( -10.241@I
                              I                                I
                              I F6  -   F6               -.265*I
                              I F5  -   F5                .052 I
                              I                         -5.085@I
                              I                      (    .054)I
                              I                      (  -4.869@I
                              I                                I
                              I F7  -   F7               -.284*I
                              I F5  -   F5                .051 I
                              I                         -5.569@I
                              I                      (    .049)I
                              I                      (  -5.763@I
                              I                                I
                              I F7  -   F7                .251*I
                              I F6  -   F6                .050 I
                              I                          5.053@I
                              I                      (    .054)I
                              I                      (   4.653@I
                              I                                I
```



```
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 STANDARDIZED SOLUTION:                                          R-SQUARED


  PA1   =V9  =   .722*F1    + .692 E9                                 .522
  NA1   =V10 =   .713*F2    + .702 E10                                .508
  PA2   =V11 =   .799*F1    + .601 E11                                .639
  NA2   =V12 =   .751*F2    + .661 E12                                .563
  NA3   =V13 =   .751*F2    + .660 E13                                .565
  NA4   =V14 =   .754*F2    + .657 E14                                .568
```

```
  PA3   =V15 =   .830*F1    + .558 E15                                   .689
  PA4   =V16 =   .880*F1    + .474 E16                                   .775
  PA5   =V17 =   .879*F1    + .478 E17                                   .772
  NA5   =V18 =   .735*F2    + .678 E18                                   .541
  SAT1  =V44 =   .929*F7    + .370 E44                                   .863
  SAT2  =V45 =   .964*F7    + .268 E45                                   .928
  SAT3  =V46 =   .949*F7    + .314 E46                                   .901
ANGER1  =V55 =   .694*F3    + .720 E55                                   .482
ANGER2  =V56 =   .856*F3    + .517 E56                                   .733
ANGE3   =V57 =   .871*F3    + .492 E57                                   .758
ANGER4  =V58 =   .896*F3    + .443 E58                                   .804
ANGER5  =V59 =   .873*F3    + .489 E59                                   .761
  GHQ1  =V61 =   .694*F4    + .720 E61                                   .482
  GHQ7  =V67 =   .893*F4    + .450 E67                                   .797
  GHQ8  =V68 =   .848*F4    + .530 E68                                   .719
  GHQ9  =V69 =   .848*F5    + .531 E69                                   .718
GHQ10   =V70 =   .900*F5    + .436 E70                                   .810
GHQ11   =V71 =   .787*F5    + .617 E71                                   .619
GHQ12   =V72 =   .808*F4    + .589 E72                                   .654
WELLB1  =V73 =   .910*F6    + .415 E73                                   .828
WELLB2  =V74 =   .928*F6    + .374 E74                                   .860
WELLB3  =V75 =   .907*F6    + .421 E75                                   .822
WELLB4  =V76 =   .852*F6    + .524 E76                                   .726
WELLB5  =V77 =   .857*F6    + .516 E77                                   .734
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18-Jan-07      PAGE : 40  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

                V                              F
               ---                            ---
                             I F2  -   F2              -.284*I
                             I F1  -   F1                    I
                             I                               I
                             I F3  -   F3              -.359*I
                             I F1  -   F1                    I
                             I                               I
                             I F4  -   F4              -.206*I
                             I F1  -   F1                    I
                             I                               I
                             I F5  -   F5              -.285*I
                             I F1  -   F1                    I
                             I                               I
                             I F6  -   F6               .717*I
                             I F1  -   F1                    I
                             I                               I
                             I F7  -   F7               .229*I
                             I F1  -   F1                    I
                             I                               I
                             I F3  -   F3               .401*I
                             I F2  -   F2                    I
                             I                               I
                             I F4  -   F4              -.029*I
                             I F2  -   F2                    I
                             I                               I
                             I F5  -   F5               .325*I
                             I F2  -   F2                    I
                             I                               I
                             I F6  -   F6              -.353*I
                             I F2  -   F2                    I
                             I                               I
                             I F7  -   F7               .073*I
                             I F2  -   F2                    I
                             I                               I
                             I F4  -   F4               .025*I
                             I F3  -   F3                    I
                             I                               I
                             I F5  -   F5               .701*I
                             I F3  -   F3                    I
                             I                               I
                             I F6  -   F6              -.300*I
                             I F3  -   F3                    I
                             I                               I
                             I F7  -   F7              -.198*I
                             I F3  -   F3                    I
                             I                               I
                             I F5  -   F5               .128*I
                             I F4  -   F4                    I
                             I                               I
```

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18-Jan-07      PAGE : 41  EQS     Licensee:
 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES (CONTINUED)
 --------------------------------------------------

                             I F6  -   F6              -.260*I
                             I F4  -   F4                    I
                             I                               I
                             I F7  -   F7              -.463*I
```

```
I F4  -   F4                    I
I                               I
I F6  -   F6              -.265*I
I F5  -   F5                    I
I                               I
I F7  -   F7              -.284*I
I F5  -   F5                    I
I                               I
I F7  -   F7               .251*I
I F6  -   F6                    I
I                               I
```

```
-----------------------------------------------------------------------------
                         E N D    O F    M E T H O D
-----------------------------------------------------------------------------
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 TITLE:   Measurement Model of Wellness (Sample 2)

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 STATISTICS FOR MULTIPLE POPULATION ANALYSIS

 ALL EQUALITY CONSTRAINTS WERE CORRECTLY IMPOSED



 GOODNESS OF FIT SUMMARY FOR METHOD = ML

 INDEPENDENCE MODEL CHI-SQUARE        =   10321.948 ON   870 DEGREES OF FREEDOM

 INDEPENDENCE AIC =  8581.94797   INDEPENDENCE CAIC =  4261.40030
        MODEL AIC =  -110.36961          MODEL CAIC = -4177.64379

 CHI-SQUARE =     1527.630 BASED ON     819 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 FIT INDICES
 -----------
 BENTLER-BONETT     NORMED FIT INDEX =      .852
 BENTLER-BONETT NON-NORMED FIT INDEX =      .920
 COMPARATIVE FIT INDEX (CFI)         =      .925
 BOLLEN   (IFI) FIT INDEX            =      .925
 MCDONALD (MFI) FIT INDEX            =      .403
 LISREL    GFI  FIT INDEX            =      .794
 LISREL   AGFI  FIT INDEX            =      .766
 ROOT MEAN-SQUARE RESIDUAL (RMR)     =      .072
 STANDARDIZED RMR                    =      .068
 ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .047
 90% CONFIDENCE INTERVAL OF RMSEA  (        .043,        .051)


 GOODNESS OF FIT SUMMARY FOR METHOD = ROBUST

 ROBUST INDEPENDENCE MODEL CHI-SQUARE =    8855.775 ON   870 DEGREES OF FREEDOM

 INDEPENDENCE AIC =  7115.77533   INDEPENDENCE CAIC =  2795.22767
        MODEL AIC =  -544.49226          MODEL CAIC = -4611.76644

 SATORRA-BENTLER SCALED CHI-SQUARE =   1093.5077 ON     819 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 FIT INDICES
 -----------
 BENTLER-BONETT     NORMED FIT INDEX =      .877
 BENTLER-BONETT NON-NORMED FIT INDEX =      .963
 COMPARATIVE FIT INDEX (CFI)         =      .966
 BOLLEN   (IFI) FIT INDEX            =      .966
 MCDONALD (MFI) FIT INDEX            =      .703
 ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .029
 90% CONFIDENCE INTERVAL OF RMSEA  (        .025,        .034)


                        ITERATIVE SUMMARY

                    PARAMETER
 ITERATION          ABS CHANGE         ALPHA               FUNCTION
     1                .401490        1.00000               4.34633
     2                .036656        1.00000               3.95350
     3                .004511        1.00000               3.93994
     4                .001075        1.00000               3.93796
     5                .000476        1.00000               3.93719
```



```
 TITLE:   Measurement Model of Wellness (Sample 2)

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
```

WALD TEST (FOR DROPPING PARAMETERS)
MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS

	CUMULATIVE MULTIVARIATE STATISTICS				UNIVARIATE INCREMENT	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROBABILITY	CHI-SQUARE	PROBABILITY
1	2, F4,F3	.201	1	.654	.201	.654
2	2, F4,F2	.707	2	.702	.506	.477
3	1, F7,F2	2.196	3	.533	1.490	.222

TITLE: Measurement Model of Wellness (Sample 2)

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

LAGRANGE MULTIPLIER TEST (FOR RELEASING CONSTRAINTS)

CONSTRAINTS TO BE RELEASED ARE:

CONSTRAINTS FROM GROUP 2

```
CONSTR:    1   (1,V9,F1)-(2,V9,F1)=0;
CONSTR:    2   (1,V10,F2)-(2,V10,F2)=0;
CONSTR:    3   (1,V11,F1)-(2,V11,F1)=0;
CONSTR:    4   (1,V12,F2)-(2,V12,F2)=0;
CONSTR:    5   (1,V13,F2)-(2,V13,F2)=0;
CONSTR:    6   (1,V14,F2)-(2,V14,F2)=0;
CONSTR:    7   (1,V15,F1)-(2,V15,F1)=0;
CONSTR:    8   (1,V16,F1)-(2,V16,F1)=0;
CONSTR:    9   (1,V17,F1)-(2,V17,F1)=0;
CONSTR:   10   (1,V18,F2)-(2,V18,F2)=0;
CONSTR:   11   (1,V44,F7)-(2,V44,F7)=0;
CONSTR:   12   (1,V45,F7)-(2,V45,F7)=0;
CONSTR:   13   (1,V46,F7)-(2,V46,F7)=0;
CONSTR:   14   (1,V55,F3)-(2,V55,F3)=0;
CONSTR:   15   (1,V56,F3)-(2,V56,F3)=0;
CONSTR:   16   (1,V57,F3)-(2,V57,F3)=0;
CONSTR:   17   (1,V58,F3)-(2,V58,F3)=0;
CONSTR:   18   (1,V59,F3)-(2,V59,F3)=0;
CONSTR:   19   (1,V61,F4)-(2,V61,F4)=0;
CONSTR:   20   (1,V67,F4)-(2,V67,F4)=0;
CONSTR:   21   (1,V68,F4)-(2,V68,F4)=0;
CONSTR:   22   (1,V69,F5)-(2,V69,F5)=0;
CONSTR:   23   (1,V70,F5)-(2,V70,F5)=0;
CONSTR:   24   (1,V71,F5)-(2,V71,F5)=0;
CONSTR:   25   (1,V72,F4)-(2,V72,F4)=0;
CONSTR:   26   (1,V73,F6)-(2,V73,F6)=0;
CONSTR:   27   (1,V74,F6)-(2,V74,F6)=0;
CONSTR:   28   (1,V75,F6)-(2,V75,F6)=0;
CONSTR:   29   (1,V76,F6)-(2,V76,F6)=0;
CONSTR:   30   (1,V77,F6)-(2,V77,F6)=0;
CONSTR:   31   (1,F1,F2)-(2,F1,F2)=0;
CONSTR:   32   (1,F1,F3)-(2,F1,F3)=0;
CONSTR:   33   (1,F2,F3)-(2,F2,F3)=0;
CONSTR:   34   (1,F1,F4)-(2,F1,F4)=0;
CONSTR:   35   (1,F2,F4)-(2,F2,F4)=0;
CONSTR:   36   (1,F3,F4)-(2,F3,F4)=0;
CONSTR:   37   (1,F1,F5)-(2,F1,F5)=0;
CONSTR:   38   (1,F2,F5)-(2,F2,F5)=0;
CONSTR:   39   (1,F3,F5)-(2,F3,F5)=0;
CONSTR:   40   (1,F4,F5)-(2,F4,F5)=0;
CONSTR:   41   (1,F1,F6)-(2,F1,F6)=0;
CONSTR:   42   (1,F2,F6)-(2,F2,F6)=0;
CONSTR:   43   (1,F3,F6)-(2,F3,F6)=0;
CONSTR:   44   (1,F4,F6)-(2,F4,F6)=0;
CONSTR:   45   (1,F5,F6)-(2,F5,F6)=0;
CONSTR:   46   (1,F1,F7)-(2,F1,F7)=0;
CONSTR:   47   (1,F2,F7)-(2,F2,F7)=0;
CONSTR:   48   (1,F3,F7)-(2,F3,F7)=0;
CONSTR:   49   (1,F4,F7)-(2,F4,F7)=0;
CONSTR:   50   (1,F5,F7)-(2,F5,F7)=0;
CONSTR:   51   (1,F6,F7)-(2,F6,F7)=0;
```

UNIVARIATE TEST STATISTICS:

NO	CONSTRAINT	CHI-SQUARE	PROBABILITY
1	CONSTR: 1	.097	.755
2	CONSTR: 2	.060	.807
3	CONSTR: 3	.219	.640
4	CONSTR: 4	.025	.874
5	CONSTR: 5	3.844	.050
6	CONSTR: 6	.009	.926
7	CONSTR: 7	2.221	.136
8	CONSTR: 8	.006	.940
9	CONSTR: 9	.794	.373
10	CONSTR: 10	.613	.434
11	CONSTR: 11	.449	.503
12	CONSTR: 12	.936	.333
13	CONSTR: 13	.127	.721
14	CONSTR: 14	.013	.909
15	CONSTR: 15	.061	.806

16	CONSTR: 16	.027	.871
17	CONSTR: 17	.007	.932
18	CONSTR: 18	.391	.532
19	CONSTR: 19	.674	.412
20	CONSTR: 20	1.137	.286
21	CONSTR: 21	1.257	.262
22	CONSTR: 22	.370	.543
23	CONSTR: 23	1.301	.254
24	CONSTR: 24	.514	.474
25	CONSTR: 25	.352	.553
26	CONSTR: 26	.205	.651
27	CONSTR: 27	.016	.899
28	CONSTR: 28	.066	.798
29	CONSTR: 29	.697	.404
30	CONSTR: 30	.104	.747
31	CONSTR: 31	1.697	.193
32	CONSTR: 32	.184	.668
33	CONSTR: 33	.171	.679
34	CONSTR: 34	.131	.717
35	CONSTR: 35	.447	.504
36	CONSTR: 36	.172	.678
37	CONSTR: 37	.504	.478
38	CONSTR: 38	.393	.531
39	CONSTR: 39	1.929	.165
40	CONSTR: 40	2.519	.112
41	CONSTR: 41	.649	.421
42	CONSTR: 42	.033	.856
43	CONSTR: 43	2.221	.136
44	CONSTR: 44	.370	.543
45	CONSTR: 45	1.192	.275
46	CONSTR: 46	.640	.424
47	CONSTR: 47	.206	.650
48	CONSTR: 48	.036	.850
49	CONSTR: 49	1.836	.175
50	CONSTR: 50	.146	.702
51	CONSTR: 51	4.559	.033

	CUMULATIVE MULTIVARIATE STATISTICS				UNIVARIATE INCREMENT	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROBABILITY	CHI-SQUARE	PROBABILITY
1	CONSTR: 51	4.559	1	.033	4.559	.033
2	CONSTR: 5	8.378	2	.015	3.820	.051
3	CONSTR: 31	11.283	3	.010	2.905	.088
4	CONSTR: 43	14.231	4	.007	2.947	.086
5	CONSTR: 39	16.441	5	.006	2.210	.137
6	CONSTR: 49	17.969	6	.006	1.528	.216
7	CONSTR: 29	19.355	7	.007	1.385	.239
8	CONSTR: 20	20.712	8	.008	1.357	.244
9	CONSTR: 44	22.163	9	.008	1.451	.228
10	CONSTR: 9	23.312	10	.010	1.149	.284
11	CONSTR: 7	24.614	11	.010	1.302	.254
12	CONSTR: 3	25.582	12	.012	.968	.325
13	CONSTR: 19	26.614	13	.014	1.031	.310
14	CONSTR: 1	27.660	14	.016	1.046	.306
15	CONSTR: 41	28.481	15	.019	.821	.365
16	CONSTR: 8	29.937	16	.018	1.456	.228
17	CONSTR: 13	30.815	17	.021	.878	.349
18	CONSTR: 4	31.632	18	.024	.816	.366
19	CONSTR: 23	32.255	19	.029	.624	.430
20	CONSTR: 26	32.856	20	.035	.601	.438
21	CONSTR: 32	33.384	21	.042	.528	.468
22	CONSTR: 37	34.417	22	.045	1.033	.309
23	CONSTR: 38	34.854	23	.054	.437	.509
24	CONSTR: 40	35.179	24	.066	.325	.569
25	CONSTR: 42	35.544	25	.079	.365	.546
26	CONSTR: 2	35.844	26	.095	.299	.584
27	CONSTR: 36	36.231	27	.110	.387	.534
28	CONSTR: 50	36.546	28	.129	.315	.575
29	CONSTR: 46	36.778	29	.152	.233	.629
30	CONSTR: 6	37.034	30	.176	.255	.613
31	CONSTR: 21	37.249	31	.203	.216	.642
32	CONSTR: 16	37.457	32	.233	.207	.649
33	CONSTR: 28	37.698	33	.263	.241	.623
34	CONSTR: 24	37.856	34	.298	.158	.691
35	CONSTR: 11	37.987	35	.335	.131	.717
36	CONSTR: 12	38.281	36	.366	.293	.588
37	CONSTR: 35	38.407	37	.406	.126	.723
38	CONSTR: 45	38.527	38	.446	.121	.728
39	CONSTR: 15	38.626	39	.487	.098	.754
40	CONSTR: 14	38.694	40	.529	.068	.794
41	CONSTR: 27	38.743	41	.571	.049	.825
42	CONSTR: 34	38.797	42	.612	.055	.815
43	CONSTR: 10	38.831	43	.653	.034	.854
44	CONSTR: 18	38.862	44	.691	.031	.861
45	CONSTR: 30	38.891	45	.727	.029	.864
46	CONSTR: 22	38.919	46	.761	.028	.867
47	CONSTR: 17	38.934	47	.792	.015	.904
48	CONSTR: 33	38.957	48	.821	.023	.880
49	CONSTR: 48	38.958	49	.847	.001	.974
50	CONSTR: 47	38.959	50	.871	.001	.973
51	CONSTR: 25	38.959	51	.891	.000	.984

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

LAGRANGE MULTIPLIER TEST (FOR ADDING PARAMETERS)

ORDERED UNIVARIATE TEST STATISTICS:

NO	CODE	PARAMETER	CHI-SQUARE	PROB.	HANCOCK 819 DF PROB.	PARAMETER CHANGE	STANDAR-DIZED CHANGE
1	2 12	1, V13,F5	20.966	.000	1.000	-.354	-.285
2	2 12	1, V13,F3	13.489	.000	1.000	-.278	-.224
3	2 12	2, V55,F4	13.344	.000	1.000	-.232	-.205
4	2 12	2, V67,F7	11.752	.001	1.000	-.177	-.160
5	2 12	1, V10,F3	8.824	.003	1.000	-.191	-.178
6	2 12	2, V74,F7	8.753	.003	1.000	.081	.097
7	2 12	1, V10,F7	8.663	.003	1.000	.177	.165
8	2 12	1, V12,F5	8.028	.005	1.000	.163	.169
9	2 12	1, V10,F4	7.829	.005	1.000	-.177	-.164
10	2 12	1, V14,F7	7.750	.005	1.000	-.150	-.149
11	2 12	2, V74,F4	7.734	.005	1.000	-.079	-.095
12	2 12	2, V9,F6	7.723	.005	1.000	.145	.170
13	2 12	2, V69,F7	7.525	.006	1.000	-.140	-.129
14	2 12	1, V16,F6	6.426	.011	1.000	-.098	-.128
15	2 12	1, V10,F5	6.373	.012	1.000	-.166	-.154
16	2 12	1, V12,F3	6.308	.012	1.000	.142	.147
17	2 12	1, V14,F4	6.255	.012	1.000	.141	.141
18	2 12	1, V76,F3	6.134	.013	1.000	-.095	-.110
19	2 12	2, V12,F6	5.764	.016	1.000	-.128	-.136
20	2 12	1, V14,F5	5.670	.017	1.000	.140	.139
21	2 12	2, V59,F1	5.622	.018	1.000	-.108	-.102
22	2 12	1, V9,F6	5.595	.018	1.000	.114	.143
23	2 12	1, V75,F5	5.280	.022	1.000	.082	.096
24	2 12	2, V75,F4	5.160	.023	1.000	.068	.083
25	2 12	2, V68,F2	4.862	.027	1.000	-.111	-.105
26	2 12	2, V12,F1	4.658	.031	1.000	-.115	-.122
27	2 12	2, V59,F7	4.590	.032	1.000	-.093	-.087
28	2 12	2, V70,F3	4.537	.033	1.000	-.125	-.118
29	2 12	2, V14,F3	4.518	.034	1.000	.124	.122
30	2 12	2, V11,F5	4.467	.035	1.000	.085	.106
31	2 12	2, V17,F3	4.389	.036	1.000	-.072	-.090
32	2 12	1, V55,F2	4.333	.037	1.000	.149	.128
33	2 12	2, V75,F2	4.333	.037	1.000	.065	.080
34	2 12	2, V9,F3	4.322	.038	1.000	.098	.115
35	2 12	1, V71,F2	4.313	.038	1.000	-.133	-.116
36	2 12	2, V11,F3	4.071	.044	1.000	.080	.101
37	2 12	1, V77,F7	4.053	.044	1.000	.079	.086
38	2 12	1, V14,F3	4.052	.044	1.000	.116	.116
39	2 12	1, V68,F2	4.052	.044	1.000	-.116	-.106
40	2 12	2, V10,F4	4.036	.045	1.000	-.125	-.116
41	2 12	2, V16,F6	4.004	.045	1.000	-.074	-.099
42	2 12	1, V13,F4	3.969	.046	1.000	-.149	-.120
43	2 12	1, V70,F3	3.922	.048	1.000	.124	.112
44	2 12	2, V57,F1	3.868	.049	1.000	.094	.084
45	2 12	2, V72,F7	3.835	.050	1.000	.108	.101
46	2 12	2, V68,F5	3.781	.052	1.000	-.096	-.091
47	2 12	1, V11,F6	3.766	.052	1.000	.084	.107
48	2 0	2, F3,F3	3.697	.055	1.000	.158	.158
49	2 0	1, F3,F3	3.697	.055	1.000	-.158	-.158
50	2 12	2, V59,F4	3.675	.055	1.000	.085	.080
51	2 12	2, V68,F3	3.613	.057	1.000	-.092	-.087
52	2 12	1, V15,F7	3.573	.059	1.000	.065	.081
53	2 12	2, V55,F7	3.400	.065	1.000	.115	.102
54	2 12	1, V67,F7	3.361	.067	1.000	-.112	-.094
55	2 12	1, V75,F3	3.288	.070	1.000	.062	.074
56	2 12	1, V10,F1	3.201	.074	1.000	.113	.105
57	2 12	2, V73,F2	3.127	.077	1.000	-.055	-.067
58	2 12	2, V18,F4	3.068	.080	1.000	.110	.099
59	2 12	2, V44,F1	3.028	.082	1.000	.074	.055
60	2 12	1, V15,F5	3.025	.082	1.000	-.063	-.079
61	2 12	2, V76,F3	3.016	.082	1.000	-.063	-.074
62	2 12	1, V9,F4	2.878	.090	1.000	-.070	-.089
63	2 12	1, V73,F7	2.874	.090	1.000	-.053	-.063
64	2 12	2, V9,F5	2.862	.091	1.000	.080	.095
65	2 12	1, V9,F2	2.787	.095	1.000	-.071	-.090
66	2 12	2, V14,F5	2.712	.100	1.000	.096	.095
67	2 12	2, V73,F5	2.703	.100	1.000	-.049	-.060
68	2 12	2, V76,F1	2.666	.103	1.000	.069	.082
69	2 12	2, V70,F4	2.556	.110	1.000	-.076	-.072
70	2 12	2, V69,F2	2.483	.115	1.000	.086	.080
71	2 0	1, F6,F6	2.470	.116	1.000	-.119	-.119
72	2 0	2, F6,F6	2.470	.116	1.000	.119	.119
73	2 12	2, V77,F5	2.466	.116	1.000	.060	.067
74	2 12	1, V72,F2	2.463	.117	1.000	.090	.084
75	2 12	2, V68,F7	2.419	.120	1.000	.080	.076
76	2 12	2, V61,F2	2.416	.120	1.000	.099	.091
77	2 12	1, V61,F7	2.414	.120	1.000	.104	.094
78	2 12	2, V10,F3	2.395	.122	1.000	-.100	-.093
79	2 12	2, V72,F3	2.378	.123	1.000	.080	.075
80	2 12	2, V46,F4	2.349	.125	1.000	-.063	-.048
81	2 12	1, V18,F4	2.331	.127	1.000	.099	.088
82	2 12	1, V44,F5	2.307	.129	1.000	.062	.047
83	2 12	1, V46,F4	2.299	.129	1.000	-.075	-.054
84	2 12	1, V70,F7	2.286	.131	1.000	.082	.074
85	2 12	2, V73,F7	2.274	.132	1.000	-.044	-.053
86	2 12	2, V17,F5	2.273	.132	1.000	-.052	-.065
87	2 12	1, V16,F2	2.209	.137	1.000	.053	.069
88	2 12	2, V70,F7	2.176	.140	1.000	.070	.066
89	2 12	2, V71,F7	2.144	.143	1.000	.086	.075
90	2 12	1, V56,F1	2.121	.145	1.000	-.075	-.069
91	2 12	2, V13,F5	2.102	.147	1.000	-.095	-.084
92	2 12	1, V59,F4	2.087	.149	1.000	.068	.063

93	2	12	1, V10,F6	2.067	.151	1.000	.091	.084
94	2	12	2, V16,F3	2.026	.155	1.000	-.046	-.061
95	2	12	2, V68,F6	2.017	.156	1.000	.070	.066
96	2	12	1, V69,F7	1.984	.159	1.000	-.087	-.074
97	2	12	2, V59,F2	1.970	.160	1.000	-.067	-.063
98	2	12	2, V57,F6	1.858	.173	1.000	.064	.057
99	2	12	1, V15,F3	1.761	.185	1.000	-.047	-.059
100	2	12	1, V14,F1	1.742	.187	1.000	-.074	-.074
101	2	12	1, V69,F2	1.740	.187	1.000	.088	.075
102	2	12	2, V17,F4	1.735	.188	1.000	.045	.056
103	2	0	2, F7,F7	1.721	.190	1.000	-.143	-.143
104	2	0	1, F7,F7	1.721	.190	1.000	.143	.143
105	2	12	2, V16,F5	1.710	.191	1.000	-.042	-.056
106	2	12	1, V17,F6	1.705	.192	1.000	.051	.064
107	2	12	1, V11,F5	1.680	.195	1.000	.050	.064
108	2	12	1, V55,F4	1.676	.195	1.000	-.087	-.075
109	2	12	2, V17,F6	1.668	.197	1.000	-.050	-.063
110	2	12	2, V61,F6	1.666	.197	1.000	-.080	-.073
111	2	12	2, V15,F3	1.654	.198	1.000	.050	.061
112	2	12	1, V17,F3	1.638	.201	1.000	-.044	-.055
113	2	12	1, V76,F5	1.608	.205	1.000	-.050	-.058
114	2	12	1, V77,F4	1.585	.208	1.000	-.052	-.057
115	2	12	2, V12,F4	1.561	.212	1.000	.066	.069
116	2	12	1, V11,F3	1.498	.221	1.000	.046	.059
117	2	12	2, V69,F4	1.494	.222	1.000	.063	.058
118	2	12	1, V67,F1	1.471	.225	1.000	.072	.061
119	2	12	2, V13,F4	1.470	.225	1.000	-.076	-.067
120	2	12	1, V45,F6	1.424	.233	1.000	-.040	-.031
121	2	12	2, V69,F6	1.387	.239	1.000	-.060	-.056
122	2	12	1, V61,F5	1.331	.249	1.000	-.077	-.069
123	2	12	1, V61,F3	1.327	.249	1.000	-.074	-.066
124	2	12	2, V45,F6	1.310	.252	1.000	-.039	-.031
125	2	12	2, V76,F7	1.299	.254	1.000	.040	.047
126	2	12	2, V57,F7	1.281	.258	1.000	.052	.046
127	2	12	2, V13,F3	1.278	.258	1.000	-.074	-.066
128	2	12	2, V75,F7	1.259	.262	1.000	-.032	-.040
129	2	12	1, V55,F7	1.238	.266	1.000	.072	.062
130	2	12	1, V12,F6	1.228	.268	1.000	-.061	-.064
131	2	12	1, V55,F6	1.214	.271	1.000	-.073	-.063
132	2	12	2, V77,F4	1.200	.273	1.000	.042	.047
133	2	12	1, V13,F6	1.188	.276	1.000	.081	.065
134	2	12	2, V18,F6	1.145	.285	1.000	.068	.061
135	2	12	1, V61,F1	1.142	.285	1.000	-.070	-.063
136	2	12	1, V13,F1	1.139	.286	1.000	.079	.064
137	2	12	1, V68,F5	1.139	.286	1.000	.061	.056
138	2	12	1, V77,F2	1.124	.289	1.000	.045	.049
139	2	12	2, V44,F6	1.123	.289	1.000	.045	.033
140	2	12	1, V57,F1	1.120	.290	1.000	.045	.041
141	2	12	2, V9,F2	1.117	.291	1.000	-.051	-.060
142	2	12	2, V74,F3	1.110	.292	1.000	.029	.035
143	2	12	2, V15,F5	1.094	.296	1.000	.041	.050
144	2	12	2, V55,F1	1.082	.298	1.000	.068	.060
145	2	12	1, V16,F3	1.056	.304	1.000	.035	.046
146	2	12	1, V18,F3	1.032	.310	1.000	.067	.060
147	2	12	1, V72,F7	.997	.318	1.000	.058	.053
148	2	12	2, V70,F1	.997	.318	1.000	.048	.046
149	2	12	2, V46,F6	.984	.321	1.000	.037	.028
150	2	12	1, V56,F6	.965	.326	1.000	-.049	-.045
151	2	12	1, V13,F7	.935	.334	1.000	.069	.056
152	2	12	2, V55,F6	.923	.337	1.000	.061	.054
153	2	12	2, V15,F7	.922	.337	1.000	-.036	-.044
154	2	12	2, V69,F1	.915	.339	1.000	-.050	-.046
155	2	12	2, V72,F6	.908	.341	1.000	-.050	-.047
156	2	12	2, V18,F7	.907	.341	1.000	.058	.052
157	2	12	2, V57,F2	.902	.342	1.000	.048	.042
158	2	12	2, V9,F4	.880	.348	1.000	-.044	-.052
159	2	0	2, F1,F1	.862	.353	1.000	-.076	-.076
160	2	0	1, F1,F1	.862	.353	1.000	.076	.076
161	2	12	2, V76,F4	.855	.355	1.000	-.034	-.040
162	2	12	2, V45,F4	.852	.356	1.000	.034	.027
163	2	12	1, V11,F7	.834	.361	1.000	-.033	-.042
164	2	12	1, V44,F4	.829	.363	1.000	.039	.029
165	2	12	2, V71,F3	.809	.368	1.000	.063	.055
166	2	0	1, F5,F5	.800	.371	1.000	-.085	-.085
167	2	0	2, F5,F5	.800	.371	1.000	.085	.085
168	2	12	1, V45,F5	.729	.393	1.000	-.030	-.024
169	2	12	2, V55,F2	.728	.394	1.000	.059	.052
170	2	12	1, V17,F5	.718	.397	1.000	-.030	-.037
171	2	12	1, V46,F6	.715	.398	1.000	.038	.028
172	2	12	2, V14,F4	.695	.405	1.000	.047	.046
173	2	12	1, V45,F4	.673	.412	1.000	.030	.024
174	2	12	2, V58,F6	.647	.421	1.000	-.036	-.032
175	2	12	1, V67,F2	.639	.424	1.000	.049	.041
176	2	12	2, V61,F3	.631	.427	1.000	-.049	-.045
177	2	12	2, V45,F1	.630	.428	1.000	-.028	-.022
178	2	12	2, V75,F5	.623	.430	1.000	.024	.029
179	2	12	1, V56,F2	.616	.433	1.000	-.042	-.039
180	2	12	2, V57,F5	.614	.433	1.000	-.043	-.038
181	2	12	2, V11,F7	.603	.437	1.000	-.030	-.037
182	2	12	2, V75,F3	.600	.439	1.000	.023	.028
183	2	12	1, V18,F7	.598	.439	1.000	-.048	-.043
184	2	12	2, V70,F2	.591	.442	1.000	-.039	-.037
185	2	12	2, V11,F6	.590	.442	1.000	-.034	-.043
186	2	12	2, V77,F1	.582	.445	1.000	.034	.038
187	2	12	1, V76,F4	.575	.448	1.000	.030	.035
188	2	12	1, V17,F4	.570	.450	1.000	.026	.033
189	2	12	2, V67,F5	.569	.451	1.000	.037	.033
190	2	12	2, V67,F3	.565	.452	1.000	.036	.032
191	2	12	1, V57,F4	.563	.453	1.000	.031	.029
192	2	12	1, V46,F1	.561	.454	1.000	.034	.025
193	2	12	2, V16,F2	.554	.457	1.000	.024	.033
194	2	12	1, V57,F7	.546	.460	1.000	-.030	-.027

195	2	12	1, V68,F1	.535	.465	1.000	-.041	-.037
196	2	12	1, V55,F5	.525	.469	1.000	.058	.049
197	2	12	1, V59,F5	.524	.469	1.000	.040	.037
198	2	12	2, V13,F6	.523	.470	1.000	.046	.041
199	2	12	1, V56,F4	.517	.472	1.000	-.037	-.034
200	2	12	2, V12,F7	.516	.472	1.000	-.037	-.039
201	2	12	2, V73,F1	.511	.475	1.000	-.025	-.030
202	2	12	1, V74,F4	.502	.479	1.000	.021	.025
203	2	12	2, V11,F2	.496	.481	1.000	-.029	-.036
204	2	12	2, V59,F6	.495	.482	1.000	-.031	-.029
205	2	12	1, V58,F4	.495	.482	1.000	-.031	-.027
206	2	12	1, V74,F7	.491	.483	1.000	-.019	-.023
207	2	12	1, V68,F3	.489	.484	1.000	.039	.035
208	2	12	1, V77,F1	.477	.490	1.000	-.032	-.035
209	2	12	2, V67,F2	.465	.495	1.000	.034	.031
210	2	12	2, V12,F5	.457	.499	1.000	.037	.039
211	2	12	1, V73,F2	.455	.500	1.000	-.023	-.027
212	2	12	1, V45,F3	.447	.504	1.000	.022	.018
213	2	12	2, V71,F6	.430	.512	1.000	.039	.034
214	2	12	1, V71,F3	.417	.518	1.000	-.045	-.040
215	2	12	2, V69,F3	.416	.519	1.000	.041	.038
216	2	12	2, V57,F4	.411	.521	1.000	-.030	-.027
217	2	12	1, V67,F3	.397	.529	1.000	.037	.031
218	2	12	1, V69,F3	.396	.529	1.000	-.045	-.038
219	2	12	2, V56,F5	.377	.539	1.000	.034	.032
220	2	12	2, V12,F3	.373	.541	1.000	.033	.035
221	2	12	1, V67,F6	.369	.543	1.000	-.036	-.030
222	2	12	2, V58,F7	.359	.549	1.000	-.026	-.023
223	2	12	2, V18,F1	.349	.555	1.000	.038	.034
224	2	12	2, V56,F7	.332	.564	1.000	.025	.024
225	2	12	1, V71,F4	.330	.565	1.000	.035	.031
226	2	12	1, V9,F5	.330	.566	1.000	.024	.030
227	2	12	2, V10,F1	.328	.567	1.000	.036	.034
228	2	12	1, V44,F2	.326	.568	1.000	.023	.017
229	2	12	1, V71,F7	.314	.575	1.000	-.033	-.029
230	2	12	1, V9,F7	.301	.583	1.000	-.022	-.027
231	2	12	2, V74,F5	.299	.584	1.000	-.015	-.019
232	2	12	2, V11,F4	.296	.587	1.000	.022	.027
233	2	12	1, V67,F5	.295	.587	1.000	.033	.028
234	2	12	1, V76,F1	.276	.599	1.000	.023	.027
235	2	12	2, V56,F1	.275	.600	1.000	-.024	-.023
236	2	12	1, V57,F6	.266	.606	1.000	.021	.020
237	2	12	2, V14,F1	.263	.608	1.000	-.029	-.029
238	2	12	1, V75,F1	.258	.611	1.000	-.020	-.023
239	2	12	2, V72,F5	.255	.613	1.000	.027	.025
240	2	12	1, V76,F7	.254	.614	1.000	-.019	-.022
241	2	12	2, V56,F6	.251	.616	1.000	.023	.022
242	2	12	2, V74,F1	.246	.620	1.000	-.016	-.019
243	2	12	1, V74,F5	.245	.620	1.000	-.014	-.017
244	2	12	1, V11,F2	.243	.622	1.000	.019	.025
245	2	12	1, V61,F2	.240	.624	1.000	-.033	-.030
246	2	12	2, V56,F2	.240	.624	1.000	-.024	-.023
247	2	12	1, V69,F4	.234	.628	1.000	.031	.026
248	2	12	1, V12,F4	.233	.629	1.000	-.027	-.028
249	2	12	1, V76,F2	.230	.631	1.000	.020	.023
250	2	12	1, V68,F7	.229	.632	1.000	.028	.025
251	2	12	1, V59,F1	.228	.633	1.000	-.023	-.021
252	2	12	2, V45,F3	.227	.634	1.000	.016	.013
253	2	12	2, V67,F6	.225	.635	1.000	.023	.021
254	2	12	2, V71,F2	.219	.640	1.000	-.030	-.026
255	2	12	2, V58,F1	.214	.643	1.000	.021	.019
256	2	12	2, V72,F2	.214	.644	1.000	.025	.023
257	2	12	1, V74,F2	.213	.645	1.000	-.014	-.017
258	2	12	1, V45,F1	.213	.645	1.000	-.015	-.012
259	2	12	1, V44,F1	.209	.648	1.000	-.018	-.013
260	2	12	2, V46,F2	.202	.653	1.000	.017	.013
261	2	12	2, V45,F2	.198	.656	1.000	-.016	-.012
262	2	12	1, V73,F4	.189	.663	1.000	.014	.017
263	2	12	2, V76,F5	.183	.669	1.000	-.016	-.018
264	2	12	2, V44,F3	.177	.674	1.000	-.018	-.013
265	2	12	1, V18,F5	.175	.676	1.000	.028	.025
266	2	12	1, V58,F5	.165	.684	1.000	-.021	-.019
267	2	12	2, V58,F4	.160	.689	1.000	.018	.016
268	2	12	1, V18,F6	.144	.704	1.000	-.025	-.022
269	2	12	2, V73,F3	.142	.706	1.000	-.011	-.014
270	2	12	1, V59,F6	.142	.706	1.000	-.017	-.016
271	2	12	1, V70,F2	.142	.707	1.000	.022	.020
272	2	12	2, V46,F1	.134	.714	1.000	-.014	-.011
273	2	12	2, V56,F4	.131	.717	1.000	.016	.016
274	2	12	1, V58,F6	.131	.718	1.000	.016	.014
275	2	12	1, V15,F6	.127	.721	1.000	-.015	-.018
276	2	0	1, F4,F4	.126	.722	1.000	.045	.045
277	2	0	2, F4,F4	.126	.722	1.000	-.045	-.045
278	2	12	1, V68,F6	.123	.726	1.000	.020	.018
279	2	12	1, V46,F5	.115	.735	1.000	-.016	-.012
280	2	12	2, V44,F5	.115	.735	1.000	-.015	-.011
281	2	12	1, V70,F6	.110	.741	1.000	.018	.016
282	2	12	1, V44,F3	.108	.742	1.000	-.013	-.010
283	2	12	1, V61,F6	.108	.742	1.000	.021	.019
284	2	12	2, V46,F3	.106	.744	1.000	-.012	-.009
285	2	12	2, V76,F2	.098	.755	1.000	-.012	-.014
286	2	12	2, V14,F7	.097	.756	1.000	-.017	-.017
287	2	12	2, V55,F5	.095	.758	1.000	.023	.021
288	2	12	2, V16,F4	.094	.760	1.000	-.010	-.013
289	2	12	1, V58,F1	.093	.761	1.000	.013	.012
290	2	12	1, V69,F1	.090	.764	1.000	-.019	-.016
291	2	12	1, V16,F7	.088	.767	1.000	.010	.013
292	2	12	1, V72,F3	.087	.768	1.000	-.016	-.015
293	2	12	1, V46,F3	.084	.772	1.000	-.013	-.010
294	2	12	2, V14,F6	.082	.774	1.000	-.016	-.016
295	2	12	1, V56,F7	.078	.779	1.000	.014	.013
296	2	12	2, V61,F1	.075	.784	1.000	.017	.016

297	2	12	1, V73,F1	.071	.790	1.000	.010	.012
298	2	12	1, V17,F7	.070	.791	1.000	.009	.011
299	2	12	2, V70,F6	.066	.797	1.000	.012	.012
300	2	12	2, V71,F4	.065	.798	1.000	-.015	-.013
301	2	12	2, V18,F3	.064	.800	1.000	.016	.015
302	2	12	1, V75,F4	.064	.800	1.000	-.009	-.011
303	2	12	1, V59,F7	.063	.802	1.000	-.011	-.010
304	2	12	2, V75,F1	.060	.806	1.000	-.009	-.011
305	2	12	2, V10,F7	.058	.809	1.000	-.015	-.013
306	2	12	1, V12,F7	.055	.814	1.000	.012	.013
307	2	12	2, V15,F2	.053	.819	1.000	.009	.011
308	2	12	2, V15,F6	.052	.819	1.000	.010	.012
309	2	12	1, V15,F2	.051	.822	1.000	-.008	-.010
310	2	12	1, V58,F7	.050	.823	1.000	.009	.008
311	2	12	2, V68,F1	.050	.823	1.000	-.011	-.010
312	2	12	1, V72,F6	.049	.825	1.000	-.012	-.011
313	2	12	2, V77,F7	.047	.827	1.000	-.008	-.009
314	2	12	2, V15,F4	.046	.830	1.000	-.008	-.010
315	2	12	1, V57,F5	.046	.831	1.000	-.011	-.010
316	2	12	1, V77,F5	.045	.831	1.000	.009	.010
317	2	12	1, V45,F2	.045	.831	1.000	-.007	-.006
318	2	12	1, V59,F2	.041	.840	1.000	-.010	-.009
319	2	12	2, V59,F5	.040	.842	1.000	-.011	-.010
320	2	12	1, V77,F3	.037	.847	1.000	-.008	-.008
321	2	12	1, V72,F1	.036	.850	1.000	.011	.010
322	2	12	2, V44,F2	.036	.850	1.000	-.008	-.006
323	2	12	1, V75,F7	.034	.855	1.000	-.006	-.007
324	2	12	1, V12,F1	.033	.856	1.000	.010	.010
325	2	12	2, V9,F7	.033	.856	1.000	.008	.010
326	2	12	1, V14,F6	.033	.856	1.000	.010	.010
327	2	12	1, V70,F1	.032	.858	1.000	-.010	-.009
328	2	12	1, V16,F5	.031	.861	1.000	.006	.008
329	2	12	2, V18,F5	.028	.867	1.000	-.011	-.010
330	2	12	2, V16,F7	.028	.867	1.000	.005	.007
331	2	12	2, V71,F1	.027	.870	1.000	.010	.009
332	2	12	1, V15,F4	.025	.875	1.000	-.006	-.007
333	2	12	2, V61,F7	.025	.875	1.000	-.010	-.009
334	2	12	1, V74,F3	.023	.880	1.000	.004	.005
335	2	12	2, V13,F7	.021	.885	1.000	.009	.008
336	2	12	1, V71,F1	.021	.886	1.000	.009	.008
337	2	12	1, V46,F2	.020	.887	1.000	-.007	-.005
338	2	12	1, V56,F5	.020	.889	1.000	-.008	-.008
339	2	12	1, V73,F3	.019	.889	1.000	.004	.005
340	2	12	1, V55,F1	.016	.900	1.000	-.009	-.007
341	2	12	2, V46,F5	.016	.901	1.000	.005	.004
342	2	12	2, V13,F1	.014	.904	1.000	.008	.007
343	2	12	2, V58,F2	.011	.918	1.000	.005	.004
344	2	12	2, V77,F2	.010	.920	1.000	.004	.004
345	2	12	1, V73,F5	.009	.924	1.000	-.003	-.004
346	2	12	1, V70,F4	.008	.928	1.000	-.005	-.005
347	2	12	1, V72,F5	.008	.928	1.000	-.005	-.005
348	2	12	1, V9,F3	.008	.929	1.000	.004	.005
349	2	12	1, V11,F4	.008	.930	1.000	-.003	-.004
350	2	12	2, V73,F4	.008	.930	1.000	.003	.003
351	2	12	1, V75,F2	.007	.933	1.000	-.003	-.004
352	2	12	1, V44,F6	.007	.933	1.000	-.003	-.002
353	2	12	2, V10,F6	.006	.939	1.000	-.005	-.004
354	2	0	2, F2,F2	.005	.943	1.000	.009	.009
355	2	0	1, F2,F2	.005	.943	1.000	-.009	-.009
356	2	12	2, V74,F2	.005	.943	1.000	-.002	-.003
357	2	12	1, V18,F1	.005	.944	1.000	.005	.004
358	2	12	1, V74,F1	.005	.946	1.000	-.002	-.003
359	2	12	1, V58,F2	.003	.956	1.000	-.003	-.002
360	2	12	1, V17,F2	.003	.957	1.000	-.002	-.002
361	2	12	2, V61,F5	.003	.958	1.000	.003	.003
362	2	12	1, V69,F6	.003	.960	1.000	.003	.003
363	2	12	2, V67,F1	.002	.962	1.000	.002	.002
364	2	12	2, V45,F5	.002	.963	1.000	-.002	-.001
365	2	12	2, V10,F5	.002	.964	1.000	-.003	-.003
366	2	12	1, V57,F2	.002	.967	1.000	.002	.002
367	2	12	2, V72,F1	.002	.968	1.000	.002	.002
368	2	12	1, V71,F6	.002	.969	1.000	-.002	-.002
369	2	12	1, V16,F4	.001	.970	1.000	.001	.002
370	2	12	2, V58,F5	.001	.972	1.000	-.002	-.002
371	2	12	2, V17,F2	.001	.979	1.000	-.001	-.001
372	2	12	2, V44,F4	.001	.981	1.000	.001	.001
373	2	12	2, V77,F3	.000	.984	1.000	-.001	-.001
374	2	12	2, V17,F7	.000	.994	1.000	.000	.000

18-Jan-07 PAGE : 46 EQS Licensee:
TITLE: Measurement Model of Wellness (Sample 2)

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

MULTIVARIATE LAGRANGE MULTIPLIER TEST BY SIMULTANEOUS PROCESS IN STAGE 1

PARAMETER SETS (SUBMATRICES) ACTIVE AT THIS STAGE ARE:

PVV PFV PFF PDD GVV GVF GFV GFF BVF BFF

	CUMULATIVE MULTIVARIATE STATISTICS				UNIVARIATE INCREMENT			
							HANCOCK'S SEQUENTIAL	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROB.	CHI-SQUARE	PROB.	D.F.	PROB.
1	1, V13,F5	20.966	1	.000	20.966	.000	819	1.000
2	2, V55,F4	34.302	2	.000	13.335	.000	818	1.000

```
   3   1, V10,F3       47.379     3    .000       13.077    .000   817   1.000
   4   2, V67,F7       59.137     4    .000       11.758    .001   816   1.000
   5   2, V74,F7       68.028     5    .000        8.891    .003   815   1.000
   6   1, V10,F4       75.876     6    .000        7.849    .005   814   1.000
   7   2,  V9,F6       83.641     7    .000        7.765    .005   813   1.000
   8   1,  V9,F6       98.553     8    .000       14.912    .000   812   1.000
   9   2, V69,F7      106.106     9    .000        7.553    .006   811   1.000
  10   2, V12,F6      112.394    10    .000        6.287    .012   810   1.000
  11   1, V76,F3      118.261    11    .000        5.867    .015   809   1.000
  12   2,  V9,F3      124.059    12    .000        5.799    .016   808   1.000
  13   2, V68,F2      129.703    13    .000        5.643    .018   807   1.000
  14   2, V14,F3      135.057    14    .000        5.355    .021   806   1.000
  15   2, V59,F1      140.414    15    .000        5.357    .021   805   1.000
  16   2, V11,F3      145.744    16    .000        5.329    .021   804   1.000
  17   2, V75,F2      150.903    17    .000        5.159    .023   803   1.000
  18   1, V75,F5      155.793    18    .000        4.890    .027   802   1.000
  19   2, V75,F4      160.551    19    .000        4.758    .029   801   1.000
  20   1, V55,F2      164.806    20    .000        4.255    .039   800   1.000
  21   1, V71,F2      168.976    21    .000        4.170    .041   799   1.000
  22   1, V16,F6      173.088    22    .000        4.111    .043   798   1.000
  23   2, V16,F6      180.811    23    .000        7.723    .005   797   1.000
  24   1, V68,F2      184.872    24    .000        4.062    .044   796   1.000
  25   1, V77,F7      188.782    25    .000        3.910    .048   795   1.000


  LAGRANGIAN MULTIPLIER TEST REQUIRED   871723 WORDS OF MEMORY.
  PROGRAM ALLOCATES ******** WORDS.
1
  Execution begins at 13:22:21
  Execution ends   at 13:22:48
  Elapsed time =      27.00 seconds
```

Appendix 3.4 Calibration Analysis of the Six-Construct Job Feature Measurement Model (all sample)

```
-----------------------------------------------------------------Page Break------------------------------------------
--------------------------1
  EQS, A STRUCTURAL EQUATION PROGRAM          MULTIVARIATE SOFTWARE, INC.
  COPYRIGHT BY P.M. BENTLER                   VERSION 6.1 (C) 1985 - 2006 (B91).


    PROGRAM CONTROL INFORMATION

    /TITLE
    measurement IV model: all sample
    /SPECIFICATIONS
    DATA='i:\eqs\datafileandoutput\target.ESS';
    VARIABLES=99; CASES=408;
    METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
    /LABELS
    V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
    V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
    V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
    V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
    V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
    V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
    V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
    V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
    V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
    V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
    V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
    V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
    V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
    V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
    V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
    V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
    V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
    V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
    V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
    V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
    /EQUATIONS
    V19 =   *F1 + E19;
    V20 =   *F1 + E20;
    V21 =   *F1 + E21;
    V22 =   *F1 + E22;
    V23 =   *F1 + E23;
    V27 =   *F2 + E27;
    V28 =   *F2 + E28;
    V29 =   *F2 + E29;
    V30 =   *F3 + E30;
    V31 =   *F3 + E31;
    V32 =   *F3 + E32;
    V33 =   *F3 + E33;
    V34 =   *F3 + E34;
    V35 =   *F4 + E35;
    V36 =   *F4 + E36;
    V37 =   *F4 + E37;
    V38 =   *F5 + E38;
    V39 =   *F5 + E39;
    V40 =   *F5 + E40;
    V41 =   *F6 + E41;
    V42 =   *F6 + E42;
    V43 =   *F6 + E43;
    /VARIANCES
     F1 = 1;


 17-May-07      PAGE :  2  EQS     Licensee:
  TITLE:   measurement IV model: all sample
```

```
 F2 = 1;
 F3 = 1;
 F4 = 1;
 F5 = 1;
 F6 = 1;
 E19 = *;
 E20 = *;
 E21 = *;
 E22 = *;
 E23 = *;
 E27 = *;
 E28 = *;
 E29 = *;
 E30 = *;
 E31 = *;
 E32 = *;
 E33 = *;
 E34 = *;
 E35 = *;
 E36 = *;
 E37 = *;
 E38 = *;
 E39 = *;
 E40 = *;
 E41 = *;
 E42 = *;
 E43 = *;
/COVARIANCES
F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;
F3,F6 = *;
F4,F6 = *;
F5,F6 = *;
/PRINT
EIS;
FIT=ALL;
TABLE=EQUATION;
/LMTEST
PROCESS=SIMULTANEOUS;
SET=PVV,PFV,PFF,PDD,GVV,GVF,GFV,GFF,
BVF,BFF;
/WTEST
PVAL=0.05;
PRIORITY=ZERO;
/END

     107 RECORDS OF INPUT MODEL FILE WERE READ


   DATA IS READ FROM i:\eqs\datafileandoutput\target.ESS
   THERE ARE  99 VARIABLES AND   408 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING ***     7 CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
    32   106   146   206   293   347   370


17-May-07      PAGE :  3  EQS     Licensee:
 TITLE:   measurement IV model: all sample


 SAMPLE STATISTICS BASED ON COMPLETE CASES


                          UNIVARIATE STATISTICS
                          ---------------------


  VARIABLE         LOAD1      LOAD2      LOAD3      LOAD4      LOAD5
                     V19        V20        V21        V22        V23

  MEAN             2.6584     2.9776     3.0150     3.1222     2.8803

  SKEWNESS (G1)     .0333     -.0553     -.0996     -.0834      .0386

  KURTOSIS (G2)    -.1581     -.1317     -.0500     -.0740     -.2724

  STANDARD DEV.     .9927      .9654      .9512      .9097     1.0371


  VARIABLE          AUT1       AUT2       AUT3       SUP1       SUP2
                     V27        V28        V29        V30        V31

  MEAN             4.6284     4.3591     4.6384     4.3267     4.6484

  SKEWNESS (G1)    -.6135     -.5965     -.6688     -.3386     -.3633

  KURTOSIS (G2)    -.1023     -.2168     -.1184     -.7744     -.5682

  STANDARD DEV.    1.4104     1.4250     1.4235     1.7177     1.5616
```

VARIABLE	SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
MEAN	4.4165	4.2544	4.6958	4.8030	4.7382
SKEWNESS (G1)	-.2850	-.3780	-.5033	-.6195	-.5279
KURTOSIS (G2)	-.5420	-.3190	-.1968	.2363	.2004
STANDARD DEV.	1.6290	1.4765	1.5157	1.3541	1.3978

VARIABLE	PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
MEAN	4.6484	3.1820	2.9252	3.0898	2.7905
SKEWNESS (G1)	-.5253	.0171	-.0657	-.1324	-.0779
KURTOSIS (G2)	.2636	.1115	-.0578	.0317	-.2008
STANDARD DEV.	1.3742	.9350	1.0146	.9808	.9930

VARIABLE	DACT2 V42	DACT3 V43
MEAN	2.8329	2.9751
SKEWNESS (G1)	-.1016	-.2538
KURTOSIS (G2)	-.1954	-.1216
STANDARD DEV.	.9846	.9795

MULTIVARIATE KURTOSIS

MARDIA'S COEFFICIENT (G2,P) = 225.9622
NORMALIZED ESTIMATE = 69.6219

ELLIPTICAL THEORY KURTOSIS ESTIMATES

MARDIA-BASED KAPPA = .4280 MEAN SCALED UNIVARIATE KURTOSIS = -.0493

MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA= .4280

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	11	214	215	266	267
ESTIMATE	1521.0599	1930.0126	1669.3858	1656.5461	2015.4045

TITLE: measurement IV model: all sample

COVARIANCE MATRIX TO BE ANALYZED: 22 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 401 CASES.

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.985				
LOAD2	V20	.535	.932			
LOAD3	V21	.415	.585	.905		
LOAD4	V22	.284	.478	.578	.828	
LOAD5	V23	.429	.652	.674	.525	1.076
AUT1	V27	-.090	-.068	-.077	-.029	-.225
AUT2	V28	-.052	-.127	-.123	-.096	-.222
AUT3	V29	-.164	-.111	-.080	-.011	-.168
SUP1	V30	-.133	-.203	-.240	-.105	-.321
SUP2	V31	-.285	-.205	-.257	-.129	-.300
SUP3	V32	-.232	-.226	-.274	-.146	-.233
SUP4	V33	-.128	-.194	-.176	-.219	-.157
SUP5	V34	-.229	-.202	-.225	-.053	-.254
PEER1	V35	-.237	-.257	-.200	-.163	-.186
PEER2	V36	-.175	-.166	-.169	-.085	-.169
PEER3	V37	-.193	-.235	-.205	-.114	-.215
SACT1	V38	.287	.402	.337	.260	.382
SACT2	V39	.282	.368	.394	.282	.431
SACT3	V40	.271	.372	.389	.259	.391
DACT1	V41	.276	.310	.328	.291	.380
DACT2	V42	.228	.341	.328	.280	.332
DACT3	V43	.259	.304	.318	.256	.302

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	1.989				
AUT2	V28	1.376	2.031			
AUT3	V29	1.450	1.558	2.026		
SUP1	V30	.779	.855	.853	2.951	
SUP2	V31	.837	.804	.813	2.130	2.439
SUP3	V32	.625	.755	.716	2.249	1.972

```
     SUP4   V33         .387       .621       .380      1.572      1.515
     SUP5   V34         .727       .760       .687      1.790      1.815
    PEER1   V35         .547       .591       .521      1.097      1.108
    PEER2   V36         .575       .619       .483      1.111      1.018
    PEER3   V37         .537       .604       .470      1.120      1.074
    SACT1   V38         .155       .014       .181      -.035      -.076
    SACT2   V39        -.053      -.191      -.082      -.280      -.299
    SACT3   V40         .041      -.110       .058      -.254      -.196
    DACT1   V41        -.101      -.042       .009      -.151      -.214
    DACT2   V42        -.082       .008      -.001      -.140      -.176
    DACT3   V43         .003       .084       .016      -.067      -.061


                        SUP3       SUP4       SUP5      PEER1      PEER2
                         V32        V33        V34        V35        V36
     SUP3   V32        2.654
     SUP4   V33        1.611      2.180
     SUP5   V34        1.812      1.488      2.297
    PEER1   V35        1.142       .885      1.210      1.834
    PEER2   V36        1.172       .882      1.160      1.556      1.954
    PEER3   V37        1.159       .925      1.080      1.318      1.508
    SACT1   V38        -.154      -.161      -.109      -.132      -.107
    SACT2   V39        -.289      -.098      -.230      -.240      -.207
    SACT3   V40        -.285      -.220      -.235      -.237      -.201
    DACT1   V41        -.088      -.057      -.114      -.121      -.102
    DACT2   V42        -.110      -.130      -.103      -.198      -.186
    DACT3   V43        -.125      -.071      -.080      -.090      -.077


                       PEER3      SACT1      SACT2      SACT3      DACT1
                         V37        V38        V39        V40        V41
    PEER3   V37        1.889
    SACT1   V38        -.166       .874
    SACT2   V39        -.236       .631      1.029
    SACT3   V40        -.281       .586       .717       .962
    DACT1   V41        -.084       .403       .544       .514       .986
    DACT2   V42        -.096       .373       .455       .398       .677
    DACT3   V43        -.001       .370       .423       .385       .530


                       DACT2      DACT3
                         V42        V43
    DACT2   V42         .970
    DACT3   V43         .648       .959


 BENTLER-WEEKS STRUCTURAL REPRESENTATION:

       NUMBER OF DEPENDENT VARIABLES = 22
           DEPENDENT V'S :     19   20   21   22   23   27   28   29   30   31
           DEPENDENT V'S :     32   33   34   35   36   37   38   39   40   41
           DEPENDENT V'S :     42   43

       NUMBER OF INDEPENDENT VARIABLES = 28
           INDEPENDENT F'S :     1    2    3    4    5    6
           INDEPENDENT E'S :    19   20   21   22   23   27   28   29   30   31
           INDEPENDENT E'S :    32   33   34   35   36   37   38   39   40   41
           INDEPENDENT E'S :    42   43

       NUMBER OF FREE PARAMETERS =  59
       NUMBER OF FIXED NONZERO PARAMETERS =  28

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO THE MODEL PROVIDED.
    CALCULATIONS FOR INDEPENDENCE MODEL NOW BEGIN.

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO INDEPENDENCE MODEL.
    CALCULATIONS FOR USER'S MODEL NOW BEGIN.


 3RD STAGE OF COMPUTATION REQUIRED    786715 WORDS OF MEMORY.
 PROGRAM ALLOCATED 200000000 WORDS

 DETERMINANT OF INPUT MATRIX IS    .65865D-03

 PARAMETER ESTIMATES APPEAR IN ORDER,
 NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.


 RESIDUAL COVARIANCE MATRIX  (S-SIGMA) :


                       LOAD1      LOAD2      LOAD3      LOAD4      LOAD5
                         V19        V20        V21        V22        V23
    LOAD1   V19         .000
    LOAD2   V20         .111       .000
    LOAD3   V21        -.029      -.031       .000
    LOAD4   V22        -.074      -.020       .057       .000
    LOAD5   V23        -.032       .012       .004      -.017       .000
     AUT1   V27        -.013       .038       .034       .060      -.109
     AUT2   V28         .030      -.013      -.003       .000      -.098
     AUT3   V29        -.078       .008       .045       .090      -.039
     SUP1   V30         .040       .038       .013       .099      -.059
     SUP2   V31        -.123       .020      -.022       .061      -.055
     SUP3   V32        -.064       .008      -.029       .051       .021
     SUP4   V33         .000      -.017       .009      -.069       .036
     SUP5   V34        -.081       .004      -.010       .121      -.031
    PEER1   V35        -.112      -.083      -.018      -.016       .003
    PEER2   V36        -.038       .024       .031       .076       .038
    PEER3   V37        -.072      -.068      -.029       .028      -.032
    SACT1   V38         .055       .079       .000      -.013       .031
```

SACT2	V39	.002	-.020	-.013	-.047	.009
SACT3	V40	.009	.009	.008	-.049	-.004
DACT1	V41	.050	-.003	.000	.025	.039
DACT2	V42	-.015	.005	-.025	-.004	-.033
DACT3	V43	.051	.016	.016	.012	-.011

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	.000				
AUT2	V28	-.014	.000			
AUT3	V29	.004	.004	.000		
SUP1	V30	.033	.053	.020	.000	
SUP2	V31	.140	.056	.034	.044	.000
SUP3	V32	-.097	-.021	-.091	.086	-.047
SUP4	V33	-.161	.032	-.233	-.070	-.018
SUP5	V34	.091	.076	-.024	-.115	.037
PEER1	V35	.061	.069	-.022	-.043	.043
PEER2	V36	.043	.047	-.112	-.139	-.149
PEER3	V37	.067	.100	-.054	.019	.045
SACT1	V38	.167	.027	.194	.170	.115
SACT2	V39	-.039	-.176	-.067	-.034	-.068
SACT3	V40	.054	-.096	.072	-.024	.020
DACT1	V41	-.092	-.032	.019	-.020	-.091
DACT2	V42	-.073	.018	.010	.001	-.044
DACT3	V43	.011	.093	.025	.054	.052

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	.000				
SUP4	V33	.023	.000			
SUP5	V34	-.032	.088	.000		
PEER1	V35	.038	.047	.237	.000	
PEER2	V36	-.037	-.036	.095	.009	.000
PEER3	V37	.093	.115	.141	-.046	.013
SACT1	V38	.045	-.011	.065	.039	.079
SACT2	V39	-.050	.083	-.020	-.035	.017
SACT3	V40	-.062	-.051	-.038	-.046	.009
DACT1	V41	.040	.040	-.001	-.002	.029
DACT2	V42	.027	-.026	.017	-.069	-.046
DACT3	V43	-.007	.018	.023	.020	.044

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	.000				
SACT1	V38	-.002	.000			
SACT2	V39	-.038	-.001	.000		
SACT3	V40	-.096	-.005	.004	.000	
DACT1	V41	.032	.023	.086	.085	.000
DACT2	V42	.028	-.035	-.037	-.063	.002
DACT3	V43	.105	.020	.002	-.009	-.048

		DACT2 V42	DACT3 V43
DACT2	V42	.000	
DACT3	V43	.028	.000

AVERAGE ABSOLUTE RESIDUAL = .0430
AVERAGE OFF-DIAGONAL ABSOLUTE RESIDUAL = .0471

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.000				
LOAD2	V20	.116	.000			
LOAD3	V21	-.030	-.034	.000		
LOAD4	V22	-.082	-.023	.065	.000	
LOAD5	V23	-.031	.012	.004	-.018	.000
AUT1	V27	-.010	.028	.026	.047	-.075
AUT2	V28	.021	-.009	-.003	.000	-.066
AUT3	V29	-.055	.006	.033	.069	-.027
SUP1	V30	.024	.023	.008	.063	-.033
SUP2	V31	-.080	.013	-.014	.043	-.034
SUP3	V32	-.040	.005	-.019	.035	.012
SUP4	V33	.000	-.012	.007	-.051	.023
SUP5	V34	-.054	.003	-.007	.088	-.019
PEER1	V35	-.084	-.064	-.014	-.013	.002
PEER2	V36	-.027	.018	.023	.060	.026
PEER3	V37	-.053	-.051	-.022	.022	-.023
SACT1	V38	.059	.088	.000	-.015	.032
SACT2	V39	.002	-.021	-.014	-.051	.008
SACT3	V40	.009	.009	.009	-.054	-.004
DACT1	V41	.051	-.004	.000	.028	.038
DACT2	V42	-.015	.005	-.027	-.005	-.033
DACT3	V43	.053	.017	.017	.013	-.011

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31

```
      AUT1   V27         .000
      AUT2   V28        -.007       .000
      AUT3   V29         .002       .002       .000
      SUP1   V30         .014       .022       .008       .000
      SUP2   V31         .064       .025       .015       .016       .000
      SUP3   V32        -.042      -.009      -.039       .031      -.019
      SUP4   V33        -.077       .015      -.111      -.027      -.008
      SUP5   V34         .042       .035      -.011      -.044       .015
    PEER1    V35         .032       .036      -.011      -.019       .020
    PEER2    V36         .022       .024      -.056      -.058      -.068
    PEER3    V37         .035       .051      -.028       .008       .021
    SACT1    V38         .126       .020       .146       .106       .079
    SACT2    V39        -.027      -.122      -.046      -.019      -.043
    SACT3    V40         .039      -.069       .052      -.014       .013
    DACT1    V41        -.065      -.023       .014      -.011      -.059
    DACT2    V42        -.052       .013       .007       .001      -.029
    DACT3    V43         .008       .067       .018       .032       .034

                        SUP3       SUP4       SUP5     PEER1      PEER2
                         V32        V33        V34        V35        V36
      SUP3   V32         .000
      SUP4   V33         .009       .000
      SUP5   V34        -.013       .039       .000
    PEER1    V35         .017       .024       .116       .000
    PEER2    V36        -.016      -.017       .045       .005       .000
    PEER3    V37         .042       .057       .068      -.025       .007
    SACT1    V38         .029      -.008       .046       .030       .061
    SACT2    V39        -.030       .055      -.013      -.025       .012
    SACT3    V40        -.039      -.035      -.026      -.034       .006
    DACT1    V41         .025       .027      -.001      -.001       .021
    DACT2    V42         .017      -.018       .011      -.052      -.033
    DACT3    V43        -.005       .012       .016       .015       .032

                      PEER3      SACT1      SACT2      SACT3      DACT1
                         V37        V38        V39        V40        V41
    PEER3    V37         .000
    SACT1    V38        -.001       .000
    SACT2    V39        -.028      -.001       .000
    SACT3    V40        -.071      -.006       .004       .000
    DACT1    V41         .023       .024       .085       .087       .000
    DACT2    V42         .021      -.038      -.037      -.065       .002
    DACT3    V43         .078       .022       .002      -.010      -.050

                      DACT2      DACT3
                         V42        V43
    DACT2    V42         .000
    DACT3    V43         .029       .000

                   AVERAGE ABSOLUTE STANDARDIZED RESIDUAL =          .0287
       AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUAL =          .0314

 LARGEST STANDARDIZED RESIDUALS:

     NO.    PARAMETER   ESTIMATE      NO.    PARAMETER   ESTIMATE
     ---    ---------   --------      ---    ---------   --------
      1     V38, V29        .146      11     V41, V39        .085
      2     V38, V27        .126      12     V35, V19       -.084
      3     V39, V28       -.122      13     V22, V19       -.082
      4     V20, V19        .116      14     V31, V19       -.080
      5     V35, V34        .116      15     V38, V31        .079
      6     V33, V29       -.111      16     V43, V37        .078
      7     V38, V30        .106      17     V33, V27       -.077
      8     V34, V22        .088      18     V27, V23       -.075
      9     V38, V20        .088      19     V40, V37       -.071
     10     V41, V40        .087      20     V29, V22        .069

17-May-07      PAGE :  6  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 DISTRIBUTION OF STANDARDIZED RESIDUALS


    ----------------------------------------
    !                                      !
140-                                       -
    !                                      !
    !                *                     !
    !                *  *                  !
    !                *  *                  !           RANGE      FREQ PERCENT
105-                 *  *                  -
    !                *  *                  !    1   -0.5  -   --        0    .00%
    !                *  *                  !    2   -0.4  -  -0.5     0    .00%
    !                *  *                  !    3   -0.3  -  -0.4     0    .00%
    !                *  *                  !    4   -0.2  -  -0.3     0    .00%
 70-                 *  *                  -    5   -0.1  -  -0.2     2    .79%
    !                *  *                  !    6    0.0  -  -0.1   126  49.80%
    !                *  *                  !    7    0.1  -   0.0   120  47.43%
    !                *  *                  !    8    0.2  -   0.1     5   1.98%
    !                *  *                  !    9    0.3  -   0.2     0    .00%
 35-                 *  *                  -    A    0.4  -   0.3     0    .00%
    !                *  *                  !    B    0.5  -   0.4     0    .00%
    !                *  *                  !    C     ++  -   0.5     0    .00%
```

```
   !                 * *                !    ------------------------------
   !                 * * *              !            TOTAL       253 100.00%
   ---------------------------------------
      1  2  3  4  5  6  7  8  9  A  B  C    EACH "*" REPRESENTS    7 RESIDUALS
```

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17-May-07      PAGE :  7  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)



 GOODNESS OF FIT SUMMARY FOR METHOD = ML

 INDEPENDENCE MODEL CHI-SQUARE        =    6147.056 ON   231 DEGREES OF FREEDOM

 INDEPENDENCE AIC =    5685.056   INDEPENDENCE CAIC =    4531.451
        MODEL AIC =     144.066          MODEL CAIC =    -824.762

 CHI-SQUARE =      532.066 BASED ON     194 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS        529.651.

 FIT INDICES
 -----------
 BENTLER-BONETT     NORMED FIT INDEX =      .913
 BENTLER-BONETT NON-NORMED FIT INDEX =      .932
 COMPARATIVE FIT INDEX (CFI)         =      .943
 BOLLEN'S          (IFI) FIT INDEX   =      .943
 MCDONALD'S        (MFI) FIT INDEX   =      .656
 JORESKOG-SORBOM'S  GFI  FIT INDEX   =      .893
 JORESKOG-SORBOM'S AGFI  FIT INDEX   =      .860
 ROOT MEAN-SQUARE RESIDUAL (RMR)     =      .060
 STANDARDIZED RMR                    =      .039
 ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .066
 90% CONFIDENCE INTERVAL OF RMSEA  (        .059,          .073)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                    =      .824
 RELIABILITY COEFFICIENT RHO         =      .936

 STANDARDIZED FACTOR LOADINGS FOR THE FACTOR THAT GENERATES
 MAXIMAL RELIABILITY FOR THE UNIT-WEIGHT COMPOSITE
 BASED ON THE MODEL (RHO):
 LOAD1     LOAD2     LOAD3     LOAD4     LOAD5      AUT1
     .167      .239      .254      .214      .242      .486
   AUT2      AUT3      SUP1      SUP2      SUP3      SUP4
     .516      .538      .650      .667      .663      .555
   SUP5    PEER1     PEER2     PEER3     SACT1     SACT2
     .628      .557      .591      .530      .255      .283
 SACT3     DACT1     DACT2     DACT3
     .274      .299      .323      .278



 GOODNESS OF FIT SUMMARY FOR METHOD = ROBUST

 ROBUST INDEPENDENCE MODEL CHI-SQUARE =    4383.358 ON   231 DEGREES OF FREEDOM

 INDEPENDENCE AIC =    3921.358   INDEPENDENCE CAIC =    2767.753
        MODEL AIC =     -24.305          MODEL CAIC =    -993.134

 SATORRA-BENTLER SCALED CHI-SQUARE =    363.6946 ON     194 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 RESIDUAL-BASED TEST STATISTIC                      =   683.591
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 YUAN-BENTLER RESIDUAL-BASED TEST STATISTIC         =   252.740
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00291

 YUAN-BENTLER RESIDUAL-BASED F-STATISTIC     =      1.823
 DEGREES OF FREEDOM  =                       194,   207
 PROBABILITY VALUE FOR THE F-STATISTIC IS          .00001

 FIT INDICES
 -----------
 BENTLER-BONETT     NORMED FIT INDEX =      .917
 BENTLER-BONETT NON-NORMED FIT INDEX =      .951
 COMPARATIVE FIT INDEX (CFI)         =      .959
 BOLLEN'S          (IFI) FIT INDEX   =      .959
 MCDONALD'S        (MFI) FIT INDEX   =      .809
 ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .047
 90% CONFIDENCE INTERVAL OF RMSEA  (        .039,          .054)


                       ITERATIVE SUMMARY

                   PARAMETER
 ITERATION         ABS CHANGE         ALPHA                 FUNCTION
     1               .579978         1.00000                6.41405
     2               .057012         1.00000                1.40621
     3               .022877         1.00000                1.33333
     4               .004482         1.00000                1.33037
     5               .001195         1.00000                1.33018
     6               .000322         1.00000                1.33017
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17-May-07      PAGE :  8  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


LOAD1   =V19 =     .552*F1    + 1.000 E19
                   .048
                 11.483@
               (   .054)
               ( 10.291@

LOAD2   =V20 =     .767*F1    + 1.000 E20
                   .042
                 18.308@
               (   .041)
               ( 18.511@

LOAD3   =V21 =     .803*F1    + 1.000 E21
                   .040
                 20.043@
               (   .041)
               ( 19.801@

LOAD4   =V22 =     .649*F1    + 1.000 E22
                   .041
                 15.738@
               (   .049)
               ( 13.296@

LOAD5   =V23 =     .834*F1    + 1.000 E23
                   .045
                 18.628@
               (   .042)
               ( 19.718@

  AUT1  =V27 =   1.138*F2    + 1.000 E27
                   .061
                 18.762@
               (   .073)
               ( 15.510@

  AUT2  =V28 =   1.222*F2    + 1.000 E28
                   .060
                 20.470@
               (   .063)
               ( 19.256@

  AUT3  =V29 =   1.271*F2    + 1.000 E29
                   .059
                 21.720@
               (   .069)
               ( 18.513@

  SUP1  =V30 =   1.495*F3    + 1.000 E30
                   .069
                 21.670@
               (   .055)
               ( 27.200@

  SUP2  =V31 =   1.396*F3    + 1.000 E31
                   .062
                 22.653@
               (   .056)
               ( 25.068@

  SUP3  =V32 =   1.447*F3    + 1.000 E32
                   .065
                 22.413@
               (   .058)
               ( 25.099@

  SUP4  =V33 =   1.098*F3    + 1.000 E33
                   .064
                 17.092@
               (   .074)
               ( 14.831@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


17-May-07      PAGE :  9  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SUP5  =V34 =   1.274*F3    + 1.000 E34
                   .062
                 20.510@
               (   .061)
               ( 21.016@
```

```
PEER1   =V35 =   1.188*F4    + 1.000 E35
                  .055
                21.726@
              (   .063)
              ( 18.998@

PEER2   =V36 =   1.302*F4    + 1.000 E36
                  .054
                23.914@
              (   .058)
              ( 22.492@

PEER3   =V37 =   1.148*F4    + 1.000 E37
                  .057
                20.136@
              (   .062)
              ( 18.495@

SACT1   =V38 =    .724*F5    + 1.000 E38
                  .041
                17.534@
              (   .047)
              ( 15.365@

SACT2   =V39 =    .873*F5    + 1.000 E39
                  .043
                20.363@
              (   .043)
              ( 20.226@

SACT3   =V40 =    .817*F5    + 1.000 E40
                  .042
                19.418@
              (   .043)
              ( 19.083@

DACT1   =V41 =    .793*F6    + 1.000 E41
                  .044
                18.042@
              (   .049)
              ( 16.240@

DACT2   =V42 =    .851*F6    + 1.000 E42
                  .042
                20.123@
              (   .047)
              ( 18.172@

DACT3   =V43 =    .729*F6    + 1.000 E43
                  .044
                16.393@
              (   .059)
              ( 12.270@


17-May-07      PAGE : 10  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                 F
               ---                               ---
                              I F1  -   F1              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F2  -   F2              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F3  -   F3              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F4  -   F4              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F5  -   F5              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F6  -   F6              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
```

```
                               I                                 I

17-May-07      PAGE : 11  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 E                                D
                ---                              ---
E19 -LOAD1                .680*I                                 I
                          .051 I                                 I
                        13.348@I                                 I
                      (   .053)I                                 I
                      ( 12.886@I                                 I
                               I                                 I
E20 -LOAD2                .343*I                                 I
                          .031 I                                 I
                        11.025@I                                 I
                      (   .040)I                                 I
                      (  8.545@I                                 I
                               I                                 I
E21 -LOAD3                .259*I                                 I
                          .027 I                                 I
                         9.609@I                                 I
                      (   .028)I                                 I
                      (  9.313@I                                 I
                               I                                 I
E22 -LOAD4                .406*I                                 I
                          .033 I                                 I
                        12.282@I                                 I
                      (   .054)I                                 I
                      (  7.589@I                                 I
                               I                                 I
E23 -LOAD5                .380*I                                 I
                          .035 I                                 I
                        10.807@I                                 I
                      (   .040)I                                 I
                      (  9.386@I                                 I
                               I                                 I
E27 -  AUT1               .695*I                                 I
                          .064 I                                 I
                        10.889@I                                 I
                      (   .114)I                                 I
                      (  6.077@I                                 I
                               I                                 I
E28 -  AUT2               .537*I                                 I
                          .060 I                                 I
                         8.992@I                                 I
                      (   .108)I                                 I
                      (  4.986@I                                 I
                               I                                 I
E29 -  AUT3               .411*I                                 I
                          .057 I                                 I
                         7.166@I                                 I
                      (   .112)I                                 I
                      (  3.657@I                                 I
                               I                                 I
E30 -  SUP1               .716*I                                 I
                          .064 I                                 I
                        11.165@I                                 I
                      (   .088)I                                 I
                      (  8.183@I                                 I
                               I                                 I
E31 -  SUP2               .491*I                                 I
                          .047 I                                 I
                        10.339@I                                 I
                      (   .061)I                                 I
                      (  8.024@I                                 I
                               I                                 I
E32 -  SUP3               .561*I                                 I
                          .053 I                                 I
                        10.567@I                                 I
                      (   .090)I                                 I
                      (  6.198@I                                 I
                               I                                 I
E33 -  SUP4               .974*I                                 I

                          .075 I                                 I
                        12.982@I                                 I
                      (   .151)I                                 I
                      (  6.459@I                                 I
                               I                                 I

17-May-07      PAGE : 12  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E34 -  SUP5               .673*I                                 I
                          .057 I                                 I
                        11.853@I                                 I
                      (   .086)I                                 I
                      (  7.842@I                                 I
```

```
                                 I                                 I
E35 -PEER1                  .421*I                                 I
                            .043 I                                 I
                           9.745@I                                 I
                       (    .073)I                                 I
                       (   5.794@I                                 I
                                 I                                 I
E36 -PEER2                  .259*I                                 I
                            .041 I                                 I
                           6.322@I                                 I
                       (    .055)I                                 I
                       (   4.717@I                                 I
                                 I                                 I
E37 -PEER3                  .571*I                                 I
                            .050 I                                 I
                          11.311@I                                 I
                       (    .084)I                                 I
                       (   6.776@I                                 I
                                 I                                 I
E38 -SACT1                  .350*I                                 I
                            .031 I                                 I
                          11.162@I                                 I
                       (    .047)I                                 I
                       (   7.475@I                                 I
                                 I                                 I
E39 -SACT2                  .268*I                                 I
                            .032 I                                 I
                           8.399@I                                 I
                       (    .042)I                                 I
                       (   6.299@I                                 I
                                 I                                 I
E40 -SACT3                  .295*I                                 I
                            .031 I                                 I
                           9.525@I                                 I
                       (    .035)I                                 I
                       (   8.366@I                                 I
                                 I                                 I
E41 -DACT1                  .357*I                                 I
                            .036 I                                 I
                           9.977@I                                 I
                       (    .055)I                                 I
                       (   6.428@I                                 I
                                 I                                 I
E42 -DACT2                  .245*I                                 I
                            .033 I                                 I
                           7.435@I                                 I
                       (    .060)I                                 I
                       (   4.085@I                                 I
                                 I                                 I
E43 -DACT3                  .428*I                                 I
                            .038 I                                 I
                          11.326@I                                 I
                       (    .081)I                                 I
                       (   5.271@I                                 I
                                 I                                 I

17-May-07      PAGE : 13  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                 F
               ---                               ---
                                 I F2  -   F2               -.122*I
                                 I F1  -   F1                .056 I
                                 I                         -2.192@I
                                 I                       (    .063)I
                                 I                       ( -1.933)I
                                 I                                 I
                                 I F3  -   F3               -.210*I
                                 I F1  -   F1                .053 I
                                 I                         -3.979@I
                                 I                       (    .060)I
                                 I                       ( -3.478@I
                                 I                                 I
                                 I F4  -   F4               -.191*I
                                 I F1  -   F1                .054 I
                                 I                         -3.559@I
                                 I                       (    .061)I
                                 I                       ( -3.146@I
                                 I                                 I
                                 I F5  -   F5                .580*I
                                 I F1  -   F1                .041 I
                                 I                          14.294@I
                                 I                       (    .049)I
                                 I                       ( 11.853@I
                                 I                                 I
                                 I F6  -   F6                .515*I
                                 I F1  -   F1                .045 I
                                 I                          11.582@I
                                 I                       (    .051)I
                                 I                       ( 10.102@I
                                 I                                 I
                                 I F3  -   F3                .439*I
                                 I F2  -   F2                .045 I
                                 I                           9.733@I
                                 I                       (    .054)I
```

```
                              I                      (  8.072@I
                              I                               I
                              I F4  -   F4               .360*I
                              I F2  -   F2               .049 I
                                                        7.405@I
                              I                      (   .058)I
                              I                      (  6.206@I
                              I                               I
                              I F5  -   F5              -.014*I
                              I F2  -   F2               .057 I
                              I                         -.245 I
                              I                      (   .066)I
                              I                      (  -.209)I
                              I                               I
                              I F6  -   F6              -.010*I
                              I F2  -   F2               .057 I
                              I                         -.175 I
                              I                      (   .064)I
                              I                      (  -.156)I
                              I                               I
                              I F4  -   F4               .642*I
                              I F3  -   F3               .033 I
                              I                        19.267@I
                              I                      (   .045)I
                              I                      ( 14.120@I
                              I                               I
                              I F5  -   F5              -.189*I
                              I F3  -   F3               .054 I
                              I                        -3.522@I
                              I                      (   .062)I
                              I                      ( -3.027@I
                              I                               I
                              I F6  -   F6              -.111*I
                              I F3  -   F3               .055 I
                              I                        -2.012@I
                              I                      (   .062)I
                              I                      ( -1.795)I
                              I                               I
```

17-May-07   PAGE : 14 EQS   Licensee:

TITLE: measurement IV model: all sample

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)

```
---------------------------------------------------
                              I F5  -   F5              -.198*I
                              I F4  -   F4               .054 I
                              I                        -3.667@I
                              I                      (   .064)I
                              I                      ( -3.068@I
                              I                               I
                              I F6  -   F6              -.127*I
                              I F4  -   F4               .055 I
                              I                        -2.294@I
                              I                      (   .064)I
                              I                      ( -1.977@I
                              I                               I
                              I F6  -   F6               .662*I
                              I F5  -   F5               .037 I
                              I                        18.044@I
                              I                      (   .057)I
                              I                      ( 11.572@I
                              I                               I
```

17-May-07   PAGE : 15 EQS   Licensee:

TITLE: measurement IV model: all sample

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED SOLUTION: R-SQUARED

```
LOAD1   =V19 =   .556*F1    + .831 E19                             .310
LOAD2   =V20 =   .795*F1    + .607 E20                             .632
LOAD3   =V21 =   .845*F1    + .535 E21                             .713
LOAD4   =V22 =   .714*F1    + .701 E22                             .509
LOAD5   =V23 =   .804*F1    + .594 E23                             .647
  AUT1  =V27 =   .807*F2    + .591 E27                             .651
  AUT2  =V28 =   .858*F2    + .514 E28                             .736
  AUT3  =V29 =   .893*F2    + .450 E29                             .797
  SUP1  =V30 =   .870*F3    + .493 E30                             .757
  SUP2  =V31 =   .894*F3    + .449 E31                             .799
  SUP3  =V32 =   .888*F3    + .460 E32                             .789
  SUP4  =V33 =   .744*F3    + .669 E33                             .553
  SUP5  =V34 =   .841*F3    + .541 E34                             .707
PEER1   =V35 =   .878*F4    + .479 E35                             .770
PEER2   =V36 =   .931*F4    + .364 E36                             .867
PEER3   =V37 =   .835*F4    + .550 E37                             .698
SACT1   =V38 =   .775*F5    + .632 E38                             .600
SACT2   =V39 =   .860*F5    + .510 E39                             .740
SACT3   =V40 =   .833*F5    + .554 E40                             .693
DACT1   =V41 =   .799*F6    + .601 E41                             .638
DACT2   =V42 =   .864*F6    + .503 E42                             .747
DACT3   =V43 =   .744*F6    + .668 E43                             .554
```

```
17-May-07      PAGE : 16  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

               V                               F
              ---                             ---
                              I F2  -   F2              -.122*I
                              I F1  -   F1                    I
                              I                               I
                              I F3  -   F3              -.210*I
                              I F1  -   F1                    I
                              I                               I
                              I F4  -   F4              -.191*I
                              I F1  -   F1                    I
                              I                               I
                              I F5  -   F5               .580*I
                              I F1  -   F1                    I
                              I                               I
                              I F6  -   F6               .515*I
                              I F1  -   F1                    I
                              I                               I
                              I F3  -   F3               .439*I
                              I F2  -   F2                    I
                              I                               I
                              I F4  -   F4               .360*I
                              I F2  -   F2                    I
                              I                               I
                              I F5  -   F5              -.014*I
                              I F2  -   F2                    I
                              I                               I
                              I F6  -   F6              -.010*I
                              I F2  -   F2                    I
                              I                               I
                              I F4  -   F4               .642*I
                              I F3  -   F3                    I
                              I                               I
                              I F5  -   F5              -.189*I
                              I F3  -   F3                    I
                              I                               I
                              I F6  -   F6              -.111*I
                              I F3  -   F3                    I
                              I                               I
                              I F5  -   F5              -.198*I
                              I F4  -   F4                    I
                              I                               I
                              I F6  -   F6              -.127*I
                              I F4  -   F4                    I
                              I                               I
                              I F6  -   F6               .662*I
                              I F5  -   F5                    I
                              I                               I



-------------------------------------------------------------------------------
                          E N D    O F    M E T H O D
-------------------------------------------------------------------------------


17-May-07      PAGE : 17  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 WALD TEST (FOR DROPPING PARAMETERS)
 ROBUST INFORMATION MATRIX USED IN THIS WALD TEST
 MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS


        CUMULATIVE MULTIVARIATE STATISTICS              UNIVARIATE INCREMENT
        ----------------------------------              --------------------

 STEP  PARAMETER   CHI-SQUARE  D.F.  PROBABILITY       CHI-SQUARE  PROBABILITY
 ---- -----------  ----------  ----  -----------       ----------  -----------

   1     F6,F2         .024      1       .876              .024        .876
   2     F5,F2         .045      2       .978              .021        .884


17-May-07      PAGE : 18  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 LAGRANGE MULTIPLIER TEST (FOR ADDING PARAMETERS)


 ORDERED UNIVARIATE TEST STATISTICS:
                                                 HANCOCK              STANDAR-
                               CHI-              194 DF   PARAMETER   DIZED
```

NO	CODE		PARAMETER	SQUARE	PROB.	PROB.	CHANGE	CHANGE
1	2	12	V41,F5	21.110	.000	1.000	.287	.289
2	2	12	V42,F5	21.036	.000	1.000	-.297	-.301
3	2	12	V38,F2	15.790	.000	1.000	.141	.151
4	2	12	V34,F4	15.575	.000	1.000	.255	.168
5	2	12	V36,F3	14.811	.000	1.000	-.226	-.162
6	2	12	V39,F2	13.964	.000	1.000	-.135	-.133
7	2	12	V28,F5	10.767	.001	1.000	-.156	-.109
8	2	12	V29,F4	7.459	.006	1.000	-.138	-.097
9	2	12	V38,F3	6.092	.014	1.000	.088	.094
10	2	12	V36,F1	5.993	.014	1.000	.100	.071
11	2	12	V33,F2	5.465	.019	1.000	-.145	-.098
12	2	12	V29,F5	4.990	.025	1.000	.104	.073
13	2	12	V30,F4	4.702	.030	1.000	-.150	-.087
14	2	12	V35,F3	4.697	.030	1.000	.125	.092
15	2	12	V37,F3	4.687	.030	1.000	.133	.097
16	2	12	V23,F2	4.536	.033	1.000	-.080	-.078
17	2	12	V36,F5	4.052	.044	1.000	.082	.059
18	2	12	V31,F2	3.525	.060	1.000	.093	.060
19	2	12	V32,F2	3.458	.063	1.000	-.098	-.060
20	2	12	V31,F4	3.445	.063	1.000	-.111	-.071
21	2	12	V28,F4	3.399	.065	1.000	.095	.066
22	2	12	V38,F4	2.940	.086	1.000	.061	.066
23	2	12	V22,F5	2.939	.086	1.000	-.083	-.091
24	2	12	V35,F1	2.766	.096	1.000	-.069	-.051
25	2	12	V42,F1	2.658	.103	1.000	-.080	-.081
26	2	12	V42,F4	2.511	.113	1.000	-.058	-.059
27	2	12	V22,F3	2.494	.114	1.000	.058	.063
28	2	12	V38,F1	2.230	.135	1.000	.072	.077
29	2	12	V29,F3	2.187	.139	1.000	-.079	-.055
30	2	12	V27,F6	2.172	.141	1.000	-.074	-.053
31	2	12	V22,F2	2.093	.148	1.000	.053	.058
32	2	12	V37,F5	1.988	.159	1.000	-.065	-.047
33	2	12	V43,F4	1.777	.182	1.000	.051	.053
34	2	12	V19,F4	1.759	.185	1.000	-.060	-.060
35	2	12	V36,F2	1.724	.189	1.000	-.058	-.041
36	2	12	V35,F6	1.574	.210	1.000	-.052	-.038
37	2	12	V39,F3	1.564	.211	1.000	-.045	-.045
38	2	12	V31,F6	1.548	.213	1.000	-.055	-.035
39	2	12	V37,F1	1.473	.225	1.000	-.055	-.040
40	2	12	V41,F1	1.467	.226	1.000	.059	.059
41	2	12	V43,F2	1.416	.234	1.000	.046	.047
42	2	12	V37,F6	1.384	.239	1.000	.054	.039
43	2	12	V27,F4	1.372	.241	1.000	.063	.045
44	2	12	V22,F4	1.330	.249	1.000	.042	.046
45	2	12	V28,F1	1.299	.254	1.000	-.054	-.038
46	2	12	V28,F3	1.290	.256	1.000	.061	.043
47	2	12	V39,F1	1.109	.292	1.000	-.054	-.053
48	2	12	V19,F3	1.107	.293	1.000	-.047	-.048
49	2	12	V29,F6	1.078	.299	1.000	.048	.034
50	2	12	V27,F5	1.053	.305	1.000	.051	.036
51	2	12	V40,F4	1.036	.309	1.000	-.036	-.037
52	2	12	V35,F5	1.011	.315	1.000	-.042	-.031
53	2	12	V29,F1	.939	.332	1.000	.045	.032
54	2	12	V21,F2	.909	.340	1.000	.032	.033
55	2	12	V32,F5	.803	.370	1.000	-.042	-.026
56	2	12	V35,F2	.774	.379	1.000	.039	.029
57	2	12	V40,F3	.774	.379	1.000	-.031	-.032
58	2	12	V34,F2	.760	.383	1.000	.047	.031
59	2	12	V20,F5	.694	.405	1.000	.040	.041
60	2	12	V43,F3	.605	.437	1.000	.030	.030
61	2	12	V30,F2	.557	.455	1.000	.043	.025
62	2	12	V30,F5	.513	.474	1.000	.037	.022
63	2	12	V19,F5	.500	.479	1.000	.042	.042
64	2	12	V20,F4	.500	.480	1.000	-.025	-.026
65	2	12	V19,F6	.488	.485	1.000	.039	.039
66	2	12	V41,F2	.457	.499	1.000	-.025	-.026
67	2	12	V37,F2	.425	.515	1.000	.032	.023
68	2	12	V30,F1	.424	.515	1.000	.034	.020
69	2	12	V31,F1	.421	.517	1.000	-.029	-.019
70	2	12	V39,F6	.421	.517	1.000	.039	.039
71	2	12	V23,F3	.398	.528	1.000	-.024	-.023
72	2	12	V32,F6	.364	.547	1.000	.028	.017
73	2	12	V19,F2	.350	.554	1.000	-.027	-.027
74	2	12	V43,F1	.343	.558	1.000	.029	.029
75	2	12	V41,F4	.300	.584	1.000	.020	.021
76	2	12	V21,F6	.282	.596	1.000	-.022	-.023
77	2	12	V40,F6	.239	.625	1.000	-.028	-.029
78	2	12	V39,F4	.230	.632	1.000	-.018	-.017
79	2	12	V27,F3	.221	.638	1.000	.026	.019
80	2	12	V23,F5	.170	.680	1.000	.021	.020
81	2	12	V41,F3	.161	.688	1.000	-.015	-.015
82	2	12	V40,F2	.153	.696	1.000	.014	.014
83	2	12	V33,F4	.127	.722	1.000	.026	.018
84	2	12	V42,F2	.122	.727	1.000	-.013	-.013
85	2	12	V20,F6	.120	.729	1.000	.015	.016
86	2	12	V34,F6	.117	.733	1.000	.017	.011
87	2	12	V21,F3	.115	.734	1.000	-.011	-.012
88	2	12	V30,F6	.104	.747	1.000	.017	.010
89	2	12	V20,F3	.103	.749	1.000	.011	.012
90	2	12	V32,F4	.099	.753	1.000	.020	.012
91	2	12	V23,F4	.097	.756	1.000	.012	.011
92	2	12	V23,F6	.077	.781	1.000	-.013	-.013
93	2	12	V40,F1	.073	.787	1.000	-.013	-.014
94	2	12	V42,F3	.070	.791	1.000	-.010	-.010
95	2	12	V20,F2	.064	.800	1.000	.009	.009
96	2	12	V33,F5	.060	.806	1.000	.014	.009
97	2	12	V21,F5	.045	.832	1.000	-.010	-.010
98	2	12	V36,F6	.040	.842	1.000	.008	.006
99	2	12	V28,F6	.037	.847	1.000	.009	.006
100	2	12	V38,F6	.037	.848	1.000	-.011	-.011

```
 101    2  12       V43,F5        .032       .858     1.000      .011      .011
 102    2  12       V21,F4        .029       .866     1.000      .006      .006
 103    2  12       V22,F6        .024       .878     1.000      .007      .008
 104    2  12       V31,F5        .023       .880     1.000      .007      .004
 105    2  12       V27,F1        .015       .902     1.000      .006      .004
 106    2  12       V33,F6        .012       .912     1.000      .006      .004
 107    2  12       V34,F1        .012       .914     1.000      .005      .003
 108    2  12       V34,F5        .011       .917     1.000     -.005     -.003
 109    2  12       V33,F1        .003       .956     1.000     -.003     -.002
 110    2  12       V32,F1        .000       .994     1.000      .000      .000
 111    2   0        F6,F6        .000      1.000     1.000      .000      .000
 112    2   0        F5,F5        .000      1.000     1.000      .000      .000
 113    2   0        F4,F4        .000      1.000     1.000      .000      .000
 114    2   0        F3,F3        .000      1.000     1.000      .000      .000
 115    2   0        F2,F2        .000      1.000     1.000      .000      .000
 116    2   0        F1,F1        .000      1.000     1.000      .000      .000

17-May-07      PAGE : 19  EQS     Licensee:
 TITLE:   measurement IV model: all sample

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MULTIVARIATE LAGRANGE MULTIPLIER TEST BY SIMULTANEOUS PROCESS IN STAGE  1

 PARAMETER SETS (SUBMATRICES) ACTIVE AT THIS STAGE ARE:

    PVV PFV PFF PDD GVV GVF GFV GFF BVF BFF


       CUMULATIVE MULTIVARIATE STATISTICS      UNIVARIATE INCREMENT
       ----------------------------------      ------------------------------
                                                             HANCOCK'S
                                                             SEQUENTIAL
STEP   PARAMETER   CHI-SQUARE  D.F.   PROB.   CHI-SQUARE   PROB.  D.F.   PROB.
----  -----------  ----------  ----   -----   ----------   -----  ----   -----
   1      V41,F5       21.110     1    .000       21.110    .000   194   1.000
   2      V38,F2       36.900     2    .000       15.790    .000   193   1.000
   3      V34,F4       52.474     3    .000       15.575    .000   192   1.000
   4      V36,F3       67.286     4    .000       14.811    .000   191   1.000
   5      V28,F5       78.052     5    .000       10.767    .001   190   1.000
   6      V42,F5       83.627     6    .000        5.574    .018   189   1.000
   7      V33,F2       88.822     7    .000        5.195    .023   188   1.000
   8      V29,F4       94.004     8    .000        5.182    .023   187   1.000
   9      V36,F1       98.590     9    .000        4.586    .032   186   1.000
  10      V23,F2      103.126    10    .000        4.536    .033   185   1.000
  11      V39,F2      107.586    11    .000        4.461    .035   184   1.000


 LAGRANGIAN MULTIPLIER TEST REQUIRED   120628 WORDS OF MEMORY.
 PROGRAM ALLOCATES ******** WORDS.
1
 Execution begins at 15:22:58
 Execution ends   at 15:23:02
 Elapsed time =       4.00 seconds
```

Appendix 3.5 Cross-Validation Analysis of the Six-Construct Job Feature Measurement Model (baseline)

```
1
 EQS, A STRUCTURAL EQUATION PROGRAM          MULTIVARIATE SOFTWARE, INC.
 COPYRIGHT BY P.M. BENTLER                   VERSION 6.1 (C) 1985 - 2006 (B91).


   PROGRAM CONTROL INFORMATION

   /TITLE
   IV Measurement Model: sample2
   /SPECIFICATIONS
   DATA='I:\EQS\DatafileandOutput\leartluk(Sample2).ESS';
   VARIABLES=99; CASES=204; GROUP=2;
   METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
   /LABELS
   V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
   V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
   V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
   V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
   V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
   V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
   V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
   V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
   V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
   V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
   V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
   V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
   V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
   V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
   V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
   V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
   V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
   V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
   V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
   V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
   /EQUATIONS
   V19 =   *F1 + E19;
   V20 =   *F1 + E20;
   V21 =   *F1 + E21;
   V22 =   *F1 + E22;
```

```
   33  V23 =   *F1 + E23;
   34  V27 =   *F2 + E27;
   35  V28 =   *F2 + E28;
   36  V29 =   *F2 + E29;
   37  V30 =   *F3 + E30;
   38  V31 =   *F3 + E31;
   39  V32 =   *F3 + E32;
   40  V33 =   *F3 + E33;
   41  V34 =   *F3 + E34;
   42  V35 =   *F4 + E35;
   43  V36 =   *F4 + E36;
   44  V37 =   *F4 + E37;
   45  V38 =   *F5 + E38;
   46  V39 =   *F5 + E39;
   47  V40 =   *F5 + E40;
   48  V41 =   *F6 + E41;
   49  V42 =   *F6 + E42;
   50  V43 =   *F6 + E43;
   51  /VARIANCES
   52   F1 = 1;


17-May-07      PAGE :  2  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

   53   F2 = 1;
   54   F3 = 1;
   55   F4 = 1;
   56   F5 = 1;
   57   F6 = 1;
   58   E19 = *;
   59   E20 = *;
   60   E21 = *;
   61   E22 = *;
   62   E23 = *;
   63   E27 = *;
   64   E28 = *;
   65   E29 = *;
   66   E30 = *;
   67   E31 = *;
   68   E32 = *;
   69   E33 = *;
   70   E34 = *;
   71   E35 = *;
   72   E36 = *;
   73   E37 = *;
   74   E38 = *;
   75   E39 = *;
   76   E40 = *;
   77   E41 = *;
   78   E42 = *;
   79   E43 = *;
   80  /COVARIANCES
   81  F1,F2 = *;
   82  F1,F3 = *;
   83  F2,F3 = *;
   84  F1,F4 = *;
   85  F2,F4 = *;
   86  F3,F4 = *;
   87  F1,F5 = *;
   88  F2,F5 = *;
   89  F3,F5 = *;
   90  F4,F5 = *;
   91  F1,F6 = *;
   92  F2,F6 = *;
   93  F3,F6 = *;
   94  F4,F6 = *;
   95  F5,F6 = *;
   96  /PRINT
   97  EIS;
   98  FIT=ALL;
   99  TABLE=EQUATION;
  100  /END


     100 CUMULATED RECORDS OF INPUT MODEL FILE WERE READ (GROUP   1)


17-May-07      PAGE :  3  EQS     Licensee:
 TITLE:

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2



   PROGRAM CONTROL INFORMATION

  101
  102  /TITLE
  103  IV Measurement Model: sample1
  104  /SPECIFICATIONS
  105  DATA='I:\EQS\DatafileandOutput\leartluk(Sample1).ESS';
  106  VARIABLES=99; CASES=204;
  107  METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
  108  /LABELS
  109  V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
  110  V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
  111  V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
  112  V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
  113  V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
```

```
V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
/EQUATIONS
V19 =   *F1 + E19;
V20 =   *F1 + E20;
V21 =   *F1 + E21;
V22 =   *F1 + E22;
V23 =   *F1 + E23;
V27 =   *F2 + E27;
V28 =   *F2 + E28;
V29 =   *F2 + E29;
V30 =   *F3 + E30;
V31 =   *F3 + E31;
V32 =   *F3 + E32;
V33 =   *F3 + E33;
V34 =   *F3 + E34;
V35 =   *F4 + E35;
V36 =   *F4 + E36;
V37 =   *F4 + E37;
V38 =   *F5 + E38;
V39 =   *F5 + E39;
V40 =   *F5 + E40;
V41 =   *F6 + E41;
V42 =   *F6 + E42;
V43 =   *F6 + E43;
/VARIANCES
 F1 = 1;
 F2 = 1;
 F3 = 1;
 F4 = 1;
 F5 = 1;
 F6 = 1;
 E19 = *;
 E20 = *;


17-May-07      PAGE :  4  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 E21 = *;
 E22 = *;
 E23 = *;
 E27 = *;
 E28 = *;
 E29 = *;
 E30 = *;
 E31 = *;
 E32 = *;
 E33 = *;
 E34 = *;
 E35 = *;
 E36 = *;
 E37 = *;
 E38 = *;
 E39 = *;
 E40 = *;
 E41 = *;
 E42 = *;
 E43 = *;
/COVARIANCES
F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;
F3,F6 = *;
F4,F6 = *;
F5,F6 = *;
/PRINT
EIS;
FIT=ALL;
TABLE=EQUATION;
/LMTEST
PROCESS=SIMULTANEOUS;
SET=PVV,PFV,PFF,PDD,GVV,GVF,GFV,GFF,
BVF,BFF;
/WTEST
PVAL=0.05;
PRIORITY=ZERO;
/END
```

```
     208 CUMULATED RECORDS OF INPUT MODEL FILE WERE READ (GROUP   2)

*** NOTE THAT THE PRINT     SECTION ABOVE WILL OVERRIDE
    THE PRINT     SECTION IN A PREVIOUS GROUP.


   DATA IS READ FROM I:\EQS\DatafileandOutput\leartluk(Sample2).ESS
   THERE ARE  99 VARIABLES AND   204 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING ***     4 CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
     2    89   143   166


17-May-07      PAGE :  5  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1


 SAMPLE STATISTICS BASED ON COMPLETE CASES


                          UNIVARIATE STATISTICS
                          ---------------------
```

VARIABLE	LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
MEAN	2.7100	2.9850	3.0650	3.2050	2.9300
SKEWNESS (G1)	-.0147	-.0713	-.1287	-.1835	-.0239
KURTOSIS (G2)	-.1689	-.0300	.0690	-.0347	-.3467
STANDARD DEV.	1.0253	.9641	.9192	.9204	1.0914

VARIABLE	AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
MEAN	4.6600	4.3750	4.6500	4.2500	4.5750
SKEWNESS (G1)	-.6471	-.6715	-.7227	-.2471	-.2439
KURTOSIS (G2)	-.1798	-.0209	-.0312	-.8741	-.7707
STANDARD DEV.	1.4612	1.4158	1.4345	1.7065	1.6116

VARIABLE	SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
MEAN	4.4400	4.2550	4.7200	4.7850	4.7300
SKEWNESS (G1)	-.2913	-.3416	-.4440	-.6319	-.5727
KURTOSIS (G2)	-.5488	-.3454	-.3500	.1900	.0998
STANDARD DEV.	1.6185	1.4971	1.5341	1.4138	1.4656

VARIABLE	PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
MEAN	4.6700	3.1600	2.9200	3.0600	2.8150
SKEWNESS (G1)	-.5296	.0552	-.0616	-.0875	-.1103
KURTOSIS (G2)	.2377	.3696	.1171	.1361	-.1681
STANDARD DEV.	1.3967	.8991	.9841	.9753	.9979

VARIABLE	DACT2 V42	DACT3 V43
MEAN	2.8300	2.9900
SKEWNESS (G1)	-.0483	-.1875
KURTOSIS (G2)	-.0317	-.0251
STANDARD DEV.	.9463	.9563

```
                          MULTIVARIATE KURTOSIS
                          ---------------------

  MARDIA'S COEFFICIENT (G2,P) =    221.4836
  NORMALIZED ESTIMATE =             48.1942


                   ELLIPTICAL THEORY KURTOSIS ESTIMATES
                   ------------------------------------

  MARDIA-BASED KAPPA =       .4195 MEAN SCALED UNIVARIATE KURTOSIS =     -.0410

  MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA=           .4195
```

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	10	11	63	103	195
ESTIMATE	993.5602	1533.8729	1022.0752	892.4286	947.7666

TITLE: IV Measurement Model: sample2

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

COVARIANCE MATRIX TO BE ANALYZED: 22 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 200 CASES.

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	1.051				
LOAD2	V20	.538	.929			
LOAD3	V21	.371	.574	.845		
LOAD4	V22	.251	.455	.554	.847	
LOAD5	V23	.377	.687	.673	.542	1.191
AUT1	V27	-.084	.020	-.053	-.056	-.300
AUT2	V28	-.127	-.125	-.120	-.158	-.335
AUT3	V29	-.238	-.131	-.108	-.089	-.276
SUP1	V30	-.259	-.283	-.278	-.132	-.349
SUP2	V31	-.370	-.263	-.314	-.214	-.331
SUP3	V32	-.309	-.265	-.280	-.136	-.225
SUP4	V33	-.277	-.328	-.228	-.304	-.233
SUP5	V34	-.318	-.271	-.303	-.123	-.281
PEER1	V35	-.424	-.370	-.257	-.207	-.292
PEER2	V36	-.330	-.215	-.208	-.085	-.280
PEER3	V37	-.322	-.271	-.265	-.163	-.325
SACT1	V38	.243	.339	.236	.183	.308
SACT2	V39	.268	.320	.322	.228	.371
SACT3	V40	.249	.358	.353	.179	.391
DACT1	V41	.222	.238	.288	.294	.354
DACT2	V42	.222	.304	.252	.266	.234
DACT3	V43	.223	.236	.237	.193	.215

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	2.135				
AUT2	V28	1.389	2.004			
AUT3	V29	1.539	1.599	2.058		
SUP1	V30	.869	.886	.997	2.912	
SUP2	V31	.880	.813	.871	2.263	2.597
SUP3	V32	.562	.598	.708	2.241	2.067
SUP4	V33	.394	.502	.346	1.644	1.657
SUP5	V34	.583	.598	.545	1.899	1.981
PEER1	V35	.419	.604	.568	1.305	1.290
PEER2	V36	.516	.685	.488	1.229	1.181
PEER3	V37	.405	.622	.462	1.294	1.246
SACT1	V38	.155	.040	.167	-.171	-.138
SACT2	V39	-.133	-.196	-.154	-.472	-.446
SACT3	V40	.031	-.058	.036	-.457	-.316
DACT1	V41	-.093	.050	.101	-.270	-.275
DACT2	V42	.002	.079	.101	-.173	-.093
DACT3	V43	.177	.240	.197	-.043	.001

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	2.619				
SUP4	V33	1.621	2.241			
SUP5	V34	1.953	1.554	2.353		
PEER1	V35	1.366	1.065	1.301	1.999	
PEER2	V36	1.346	1.049	1.336	1.746	2.148
PEER3	V37	1.337	1.044	1.214	1.376	1.559
SACT1	V38	-.222	-.157	-.161	-.161	-.153
SACT2	V39	-.432	-.115	-.344	-.324	-.263
SACT3	V40	-.459	-.171	-.385	-.349	-.305
DACT1	V41	-.094	-.053	-.183	-.140	-.050
DACT2	V42	-.136	-.077	-.048	-.203	-.162
DACT3	V43	-.121	-.048	-.038	-.153	-.123

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	1.951				
SACT1	V38	-.208	.808			
SACT2	V39	-.318	.556	.968		
SACT3	V40	-.372	.548	.678	.951	
DACT1	V41	-.092	.326	.488	.478	.996
DACT2	V42	-.082	.364	.449	.387	.642
DACT3	V43	-.028	.368	.361	.327	.471

		DACT2 V42	DACT3 V43
DACT2	V42	.896	
DACT3	V43	.636	.914

BENTLER-WEEKS STRUCTURAL REPRESENTATION:

```
      NUMBER OF DEPENDENT VARIABLES = 22
          DEPENDENT V'S :    19   20   21   22   23   27   28   29   30   31
          DEPENDENT V'S :    32   33   34   35   36   37   38   39   40   41
          DEPENDENT V'S :    42   43

      NUMBER OF INDEPENDENT VARIABLES = 28
          INDEPENDENT F'S :     1    2    3    4    5    6
          INDEPENDENT E'S :    19   20   21   22   23   27   28   29   30   31
          INDEPENDENT E'S :    32   33   34   35   36   37   38   39   40   41
          INDEPENDENT E'S :    42   43

      NUMBER OF FREE PARAMETERS =  59
      NUMBER OF FIXED NONZERO PARAMETERS =  28


   DATA IS READ FROM I:\EQS\DatafileandOutput\leartluk(Sample1).ESS
   THERE ARE  99 VARIABLES AND   204 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING ***     3 CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
    32   106   146


17-May-07      PAGE :  7  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2


 SAMPLE STATISTICS BASED ON COMPLETE CASES


                          UNIVARIATE STATISTICS
                          ---------------------


  VARIABLE         LOAD1      LOAD2      LOAD3      LOAD4      LOAD5
                     V19        V20        V21        V22        V23

  MEAN              2.6070     2.9701     2.9652     3.0398     2.8308

  SKEWNESS (G1)      .0688     -.0395     -.0575      .0065      .0879

  KURTOSIS (G2)     -.1563     -.2301     -.1540     -.0492     -.2155

  STANDARD DEV.      .9590      .9691      .9817      .8935      .9804

  VARIABLE           AUT1       AUT2       AUT3       SUP1       SUP2
                     V27        V28        V29        V30        V31

  MEAN              4.5970     4.3433     4.6269     4.4030     4.7214

  SKEWNESS (G1)     -.5810     -.5244     -.6138     -.4316     -.4888

  KURTOSIS (G2)     -.0136     -.3965     -.2062     -.6529     -.2985

  STANDARD DEV.     1.3608     1.4376     1.4160     1.7297     1.5106

  VARIABLE           SUP3       SUP4       SUP5      PEER1      PEER2
                     V32        V33        V34        V35        V36

  MEAN              4.3930     4.2537     4.6716     4.8209     4.7463

  SKEWNESS (G1)     -.2778     -.4169     -.5686     -.5917     -.4601

  KURTOSIS (G2)     -.5372     -.2938     -.0395      .2301      .2677

  STANDARD DEV.     1.6431     1.4596     1.5005     1.2953     1.3305

  VARIABLE         PEER3      SACT1      SACT2      SACT3      DACT1
                     V37        V38        V39        V40        V41

  MEAN              4.6269     3.2040     2.9303     3.1194     2.7662

  SKEWNESS (G1)     -.5237     -.0227     -.0707     -.1781     -.0461

  KURTOSIS (G2)      .2901     -.1026     -.2132     -.0565     -.2286

  STANDARD DEV.     1.3546      .9712     1.0465      .9878      .9900

  VARIABLE         DACT2      DACT3
                     V42        V43

  MEAN              2.8358     2.9602

  SKEWNESS (G1)     -.1443     -.3064

  KURTOSIS (G2)     -.3428     -.2217

  STANDARD DEV.     1.0237     1.0042


                          MULTIVARIATE KURTOSIS
                          ---------------------

  MARDIA'S COEFFICIENT (G2,P) =    184.6065
  NORMALIZED ESTIMATE =             40.2701
```

ELLIPTICAL THEORY KURTOSIS ESTIMATES

MARDIA-BASED KAPPA = .3496 MEAN SCALED UNIVARIATE KURTOSIS = -.0549

MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA= .3496

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	11	22	66	96	105
ESTIMATE	1152.1118	668.6978	724.3304	578.1063	597.6180

17-May-07 PAGE : 8 EQS Licensee:
TITLE: IV Measurement Model: sample1

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

COVARIANCE MATRIX TO BE ANALYZED: 22 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 201 CASES.

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.920				
LOAD2	V20	.533	.939			
LOAD3	V21	.456	.599	.964		
LOAD4	V22	.311	.501	.596	.798	
LOAD5	V23	.478	.620	.674	.502	.961
AUT1	V27	-.099	-.157	-.104	-.009	-.154
AUT2	V28	.021	-.130	-.128	-.039	-.112
AUT3	V29	-.092	-.091	-.053	.065	-.063
SUP1	V30	-.001	-.123	-.196	-.066	-.286
SUP2	V31	-.195	-.148	-.195	-.034	-.262
SUP3	V32	-.160	-.188	-.271	-.161	-.243
SUP4	V33	.020	-.062	-.126	-.135	-.082
SUP5	V34	-.145	-.135	-.151	.013	-.231
PEER1	V35	-.051	-.145	-.141	-.118	-.080
PEER2	V36	-.020	-.118	-.129	-.085	-.058
PEER3	V37	-.067	-.201	-.148	-.070	-.108
SACT1	V38	.336	.466	.442	.342	.460
SACT2	V39	.297	.418	.468	.338	.493
SACT3	V40	.297	.389	.429	.345	.395
DACT1	V41	.328	.383	.367	.284	.405
DACT2	V42	.235	.380	.404	.297	.432
DACT3	V43	.294	.374	.399	.317	.388

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	1.852				
AUT2	V28	1.369	2.067			
AUT3	V29	1.369	1.524	2.005		
SUP1	V30	.698	.831	.716	2.992	
SUP2	V31	.802	.801	.761	1.998	2.282
SUP3	V32	.689	.914	.727	2.271	1.890
SUP4	V33	.383	.742	.415	1.507	1.381
SUP5	V34	.872	.923	.832	1.693	1.663
PEER1	V35	.677	.582	.478	.893	.930
PEER2	V36	.637	.558	.480	.998	.859
PEER3	V37	.669	.589	.480	.956	.911
SACT1	V38	.158	-.010	.196	.097	-.018
SACT2	V39	.027	-.186	-.011	-.092	-.155
SACT3	V40	.053	-.161	.080	-.058	-.082
DACT1	V41	-.110	-.134	-.083	-.030	-.150
DACT2	V42	-.166	-.063	-.102	-.109	-.261
DACT3	V43	-.171	-.071	-.165	-.089	-.121

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	2.700				
SUP4	V33	1.610	2.130			
SUP5	V34	1.680	1.429	2.252		
PEER1	V35	.926	.711	1.126	1.678	
PEER2	V36	1.005	.720	.991	1.374	1.770
PEER3	V37	.987	.810	.952	1.268	1.465
SACT1	V38	-.086	-.167	-.058	-.103	-.063
SACT2	V39	-.147	-.082	-.118	-.158	-.153
SACT3	V40	-.112	-.270	-.086	-.129	-.100
DACT1	V41	-.083	-.060	-.047	-.102	-.155
DACT2	V42	-.085	-.183	-.159	-.195	-.212
DACT3	V43	-.129	-.095	-.123	-.027	-.030

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	1.835				
SACT1	V38	-.124	.943			
SACT2	V39	-.156	.709	1.095		
SACT3	V40	-.190	.626	.758	.976	
DACT1	V41	-.078	.483	.604	.553	.980
DACT2	V42	-.112	.384	.464	.410	.716
DACT3	V43	.025	.373	.487	.445	.591

DACT2 V42	DACT3 V43

```
   DACT2    V42        1.048
   DACT3    V43         .663      1.008


 BENTLER-WEEKS STRUCTURAL REPRESENTATION:

       NUMBER OF DEPENDENT VARIABLES = 22
           DEPENDENT V'S :    19   20   21   22   23   27   28   29   30   31
           DEPENDENT V'S :    32   33   34   35   36   37   38   39   40   41
           DEPENDENT V'S :    42   43

       NUMBER OF INDEPENDENT VARIABLES = 28
           INDEPENDENT F'S :     1    2    3    4    5    6
           INDEPENDENT E'S :    19   20   21   22   23   27   28   29   30   31
           INDEPENDENT E'S :    32   33   34   35   36   37   38   39   40   41
           INDEPENDENT E'S :    42   43

       NUMBER OF FREE PARAMETERS =  59
       NUMBER OF FIXED NONZERO PARAMETERS =  28

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO THE MODEL PROVIDED.
    CALCULATIONS FOR INDEPENDENCE MODEL NOW BEGIN.

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO INDEPENDENCE MODEL.
    CALCULATIONS FOR USER'S MODEL NOW BEGIN.


 3RD STAGE OF COMPUTATION REQUIRED    860501 WORDS OF MEMORY.
 PROGRAM ALLOCATED 200000000 WORDS

 DETERMINANT OF INPUT MATRIX IN GROUP  1 IS    .26601D-03

 DETERMINANT OF INPUT MATRIX IN GROUP  2 IS    .27744D-03

*** NOTE *** RESIDUAL-BASED STATISTICS CANNOT BE
            CALCULATED BECAUSE OF PIVOTING PROBLEMS.


17-May-07      PAGE :  9  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                    =      .809
 RELIABILITY COEFFICIENT RHO         =      .933

 STANDARDIZED FACTOR LOADINGS FOR THE FACTOR THAT GENERATES
 MAXIMAL RELIABILITY FOR THE UNIT-WEIGHT COMPOSITE
 BASED ON THE MODEL (RHO):
 LOAD1     LOAD2     LOAD3     LOAD4     LOAD5       AUT1
     .105      .165      .172      .142      .162      .482
   AUT2      AUT3      SUP1      SUP2      SUP3      SUP4
     .520      .564      .673      .693      .683      .571
   SUP5     PEER1     PEER2     PEER3     SACT1     SACT2
     .663      .592      .608      .532      .150      .170
 SACT3     DACT1     DACT2     DACT3
     .168      .273      .340      .278


 PARAMETER ESTIMATES APPEAR IN ORDER,
 NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.



 RESIDUAL COVARIANCE MATRIX  (S-SIGMA) :


                     LOAD1      LOAD2      LOAD3      LOAD4      LOAD5
                      V19        V20        V21        V22        V23
   LOAD1    V19       .000
   LOAD2    V20       .132       .000
   LOAD3    V21      -.035      -.026       .000
   LOAD4    V22      -.083      -.038       .062       .000
   LOAD5    V23      -.076       .018       .005      -.008       .000
     AUT1   V27       .009       .158       .085       .058      -.146
     AUT2   V28      -.029       .019       .024      -.039      -.175
     AUT3   V29      -.131       .027       .050       .041      -.099
     SUP1   V30      -.059       .013       .018       .111      -.020
     SUP2   V31      -.176       .025      -.027       .022      -.011
     SUP3   V32      -.116       .020       .004       .098       .092
     SUP4   V33      -.128      -.108      -.008      -.123       .012
     SUP5   V34      -.141      -.009      -.042       .092       .011
   PEER1    V35      -.251      -.114      -.001       .004      -.006
   PEER2    V36      -.145       .058       .064       .139       .024
   PEER3    V37      -.168      -.044      -.038       .024      -.071
   SACT1    V38       .060       .069      -.033      -.038       .007
   SACT2    V39       .041      -.015      -.013      -.048      -.002
   SACT3    V40       .027       .030       .026      -.090       .026
   DACT1    V41       .061      -.001       .050       .098       .088
   DACT2    V42       .031       .022      -.029       .034      -.080
   DACT3    V43       .065       .003       .004       .001      -.045


                       AUT1       AUT2       AUT3       SUP1       SUP2
                       V27        V28        V29        V30        V31
     AUT1   V27       .000
     AUT2   V28      -.007       .000
```

AUT3	V29	.007	-.002	.000		
SUP1	V30	.161	.146	.185	.000	
SUP2	V31	.192	.095	.082	.054	.000
SUP3	V32	-.119	-.114	-.074	.053	-.058
SUP4	V33	-.133	-.049	-.258	-.047	.014
SUP5	V34	-.044	-.057	-.174	-.112	.027
PEER1	V35	-.069	.094	.008	-.029	-.006
PEER2	V36	-.004	.141	-.108	-.193	-.200
PEER3	V37	-.028	.169	-.035	.110	.096
SACT1	V38	.178	.064	.193	.134	.158
SACT2	V39	-.105	-.167	-.122	-.093	-.078
SACT3	V40	.058	-.029	.067	-.087	.043
DACT1	V41	-.173	-.034	.009	-.163	-.171
DACT2	V42	-.092	-.020	-.007	-.047	.030
DACT3	V43	.099	.158	.108	.062	.102

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	.000				
SUP4	V33	-.007	.000			
SUP5	V34	.017	.058	.000		
PEER1	V35	.083	.073	.121	.000	
PEER2	V36	-.023	-.009	.078	.014	.000
PEER3	V37	.197	.163	.166	-.067	.021
SACT1	V38	.072	.070	.109	.072	.096
SACT2	V39	-.067	.167	-.009	-.034	.046
SACT3	V40	-.103	.104	-.058	-.066	-.004
DACT1	V41	.009	.027	-.088	-.015	.084
DACT2	V42	-.014	.017	.064	-.054	-.004
DACT3	V43	-.021	.030	.055	-.030	.007

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	.000				
SACT1	V38	-.001	.000			
SACT2	V39	-.061	-.003	.000		
SACT3	V40	-.121	.003	.000	.000	
DACT1	V41	.020	.018	.105	.105	.000
DACT2	V42	.050	.000	-.004	-.054	.003
DACT3	V43	.080	.068	-.013	-.038	-.058

		DACT2 V42	DACT3 V43
DACT2	V42	.000	
DACT3	V43	.012	.000

AVERAGE ABSOLUTE RESIDUAL = .0603
AVERAGE OFF-DIAGONAL ABSOLUTE RESIDUAL = .0661

TITLE: IV Measurement Model: sample2

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.000				
LOAD2	V20	.133	.000			
LOAD3	V21	-.037	-.029	.000		
LOAD4	V22	-.088	-.043	.073	.000	
LOAD5	V23	-.068	.017	.005	-.008	.000
AUT1	V27	.006	.112	.063	.043	-.092
AUT2	V28	-.020	.014	.018	-.030	-.113
AUT3	V29	-.089	.020	.038	.031	-.064
SUP1	V30	-.033	.008	.011	.071	-.011
SUP2	V31	-.106	.016	-.018	.015	-.006
SUP3	V32	-.070	.013	.003	.066	.052
SUP4	V33	-.084	-.075	-.006	-.089	.007
SUP5	V34	-.089	-.006	-.030	.065	.006
PEER1	V35	-.173	-.083	-.001	.003	-.004
PEER2	V36	-.097	.041	.048	.103	.015
PEER3	V37	-.118	-.032	-.029	.019	-.047
SACT1	V38	.065	.080	-.040	-.046	.007
SACT2	V39	.041	-.016	-.014	-.053	-.002
SACT3	V40	.027	.032	.029	-.101	.025
DACT1	V41	.059	-.001	.054	.107	.080
DACT2	V42	.032	.024	-.034	.039	-.078
DACT3	V43	.067	.003	.004	.001	-.043

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	.000				
AUT2	V28	-.003	.000			
AUT3	V29	.003	-.001	.000		
SUP1	V30	.065	.060	.076	.000	
SUP2	V31	.082	.042	.035	.020	.000
SUP3	V32	-.050	-.050	-.032	.019	-.022
SUP4	V33	-.061	-.023	-.120	-.018	.006
SUP5	V34	-.019	-.026	-.079	-.043	.011
PEER1	V35	-.033	.047	.004	-.012	-.003

PEER2	V36	-.002	.068	-.052	-.077	-.085
PEER3	V37	-.014	.086	-.017	.046	.043
SACT1	V38	.135	.050	.149	.087	.109
SACT2	V39	-.073	-.120	-.086	-.056	-.049
SACT3	V40	.041	-.021	.048	-.052	.028
DACT1	V41	-.119	-.024	.006	-.096	-.106
DACT2	V42	-.067	-.015	-.005	-.029	.020
DACT3	V43	.071	.117	.079	.038	.066

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	.000				
SUP4	V33	-.003	.000			
SUP5	V34	.007	.025	.000		
PEER1	V35	.036	.034	.056	.000	
PEER2	V36	-.010	-.004	.035	.007	.000
PEER3	V37	.087	.078	.077	-.034	.010
SACT1	V38	.049	.052	.079	.056	.073
SACT2	V39	-.042	.113	-.006	-.024	.032
SACT3	V40	-.065	.071	-.039	-.048	-.003
DACT1	V41	.006	.018	-.057	-.011	.057
DACT2	V42	-.009	.012	.044	-.041	-.003
DACT3	V43	-.013	.021	.037	-.022	.005

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	.000				
SACT1	V38	-.001	.000			
SACT2	V39	-.044	-.003	.000		
SACT3	V40	-.089	.003	.000	.000	
DACT1	V41	.014	.020	.107	.107	.000
DACT2	V42	.038	.000	-.004	-.059	.003
DACT3	V43	.060	.079	-.014	-.041	-.061

		DACT2 V42	DACT3 V43
DACT2	V42	.000	
DACT3	V43	.014	.000

AVERAGE ABSOLUTE STANDARDIZED RESIDUAL = .0400
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUAL = .0438

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V35, V19	-.173	11	V28, V23	-.113
2	V38, V29	.149	12	V27, V20	.112
3	V38, V27	.135	13	V38, V31	.109
4	V20, V19	.133	14	V41, V40	.107
5	V33, V29	-.120	15	V41, V22	.107
6	V39, V28	-.120	16	V41, V39	.107
7	V41, V27	-.119	17	V41, V31	-.106
8	V37, V19	-.118	18	V31, V19	-.106
9	V43, V28	.117	19	V36, V22	.103
10	V39, V33	.113	20	V40, V22	-.101

17-May-07 PAGE : 11 EQS Licensee:
TITLE: IV Measurement Model: sample2

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DISTRIBUTION OF STANDARDIZED RESIDUALS

```
    ----------------------------------------
    !                                      !
140-                                       -
    !                                      !
    !               *                      !
    !               *                      !
    !               *  *                   !           RANGE      FREQ PERCENT
105-                *  *                   -
    !               *  *                   !    1   -0.5  -  --       0    .00%
    !               *  *                   !    2   -0.4  -  -0.5     0    .00%
    !               *  *                   !    3   -0.3  -  -0.4     0    .00%
    !               *  *                   !    4   -0.2  -  -0.3     0    .00%
 70-                *  *                   -    5   -0.1  -  -0.2     9   3.56%
    !               *  *                   !    6    0.0  -  -0.1   123  48.62%
    !               *  *                   !    7    0.1  -   0.0   110  43.48%
    !               *  *                   !    8    0.2  -   0.1    11   4.35%
    !               *  *                   !    9    0.3  -   0.2     0    .00%
 35-                *  *                   -    A    0.4  -   0.3     0    .00%
    !               *  *                   !    B    0.5  -   0.4     0    .00%
    !               *  *                   !    C     ++  -   0.5     0    .00%
    !               *  *  *                !    -------------------------------
    !            *  *  *  *                !           TOTAL       253 100.00%
    ----------------------------------------
       1  2  3  4  5  6  7  8  9  A  B  C     EACH "*" REPRESENTS    7 RESIDUALS
```

17-May-07 PAGE : 12 EQS Licensee:

```
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


LOAD1   =V19 =     .525*F1    + 1.000 E19
                   .072
                  7.312@
              (    .082)
              (  6.409@

LOAD2   =V20 =     .775*F1    + 1.000 E20
                   .059
                 13.076@
              (    .057)
              ( 13.682@

LOAD3   =V21 =     .774*F1    + 1.000 E21
                   .055
                 13.989@
              (    .058)
              ( 13.341@

LOAD4   =V22 =     .637*F1    + 1.000 E22
                   .060
                 10.611@
              (    .073)
              (  8.766@

LOAD5   =V23 =     .864*F1    + 1.000 E23
                   .068
                 12.779@
              (    .063)
              ( 13.685@

  AUT1  =V27 =   1.156*F2    + 1.000 E27
                   .089
                 12.933@
              (    .114)
              ( 10.144@

  AUT2  =V28 =   1.208*F2    + 1.000 E28
                   .084
                 14.391@
              (    .089)
              ( 13.592@

  AUT3  =V29 =   1.326*F2    + 1.000 E29
                   .082
                 16.226@
              (    .098)
              ( 13.561@

  SUP1  =V30 =   1.508*F3    + 1.000 E30
                   .096
                 15.733@
              (    .074)
              ( 20.375@

  SUP2  =V31 =   1.465*F3    + 1.000 E31
                   .089
                 16.498@
              (    .073)
              ( 20.140@

  SUP3  =V32 =   1.451*F3    + 1.000 E32
                   .090
                 16.123@
              (    .082)
              ( 17.691@

  SUP4  =V33 =   1.122*F3    + 1.000 E33
                   .092
                 12.228@
              (    .110)
              ( 10.164@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


17-May-07      PAGE : 13  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SUP5  =V34 =   1.334*F3    + 1.000 E34
                   .087
                 15.324@
              (    .083)
```

```
             ( 16.089@

PEER1   =V35 =   1.275*F4    + 1.000 E35
                  .080
                16.030@
              (   .091)
              ( 14.030@

PEER2   =V36 =   1.359*F4    + 1.000 E36
                  .081
                16.775@
              (   .085)
              ( 15.959@

PEER3   =V37 =   1.132*F4    + 1.000 E37
                  .083
                13.590@
              (   .091)
              ( 12.477@

SACT1   =V38 =    .670*F5    + 1.000 E38
                  .058
                11.646@
              (   .071)
              (  9.486@

SACT2   =V39 =    .833*F5    + 1.000 E39
                  .060
                13.904@
              (   .063)
              ( 13.255@

SACT3   =V40 =    .814*F5    + 1.000 E40
                  .060
                13.617@
              (   .063)
              ( 12.969@

DACT1   =V41 =    .735*F6    + 1.000 E41
                  .064
                11.472@
              (   .077)
              (  9.570@

DACT2   =V42 =    .869*F6    + 1.000 E42
                  .056
                15.477@
              (   .057)
              ( 15.261@

DACT3   =V43 =    .718*F6    + 1.000 E43
                  .061
                11.765@
              (   .078)
              (  9.240@


17-May-07      PAGE : 14  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                F
               ---                              ---
                              I F1  -   F1               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F2  -   F2               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F3  -   F3               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F4  -   F4               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F5  -   F5               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F6  -   F6               1.000 I
```

```
                                 I                                  I
                                 I                                  I
                                 I                                  I
                                 I                                  I
                                 I                                  I
```



```
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 E                                D
                ---                              ---
E19 -LOAD1                .776*I                                    I
                          .082 I                                    I
                         9.507@I                                    I
                     (   .081)I                                     I
                     (  9.539@I                                     I
                               I                                    I
E20 -LOAD2                .329*I                                    I
                          .044 I                                    I
                         7.473@I                                    I
                     (   .051)I                                     I
                     (  6.418@I                                     I
                               I                                    I
E21 -LOAD3                .246*I                                    I
                          .037 I                                    I
                         6.655@I                                    I
                     (   .040)I                                     I
                     (  6.213@I                                     I
                               I                                    I
E22 -LOAD4                .442*I                                    I
                          .051 I                                    I
                         8.745@I                                    I
                     (   .082)I                                     I
                     (  5.394@I                                     I
                               I                                    I
E23 -LOAD5                .445*I                                    I
                          .058 I                                    I
                         7.689@I                                    I
                     (   .069)I                                     I
                     (  6.431@I                                     I
                               I                                    I
E27 -  AUT1               .799*I                                    I
                          .098 I                                    I
                         8.117@I                                    I
                     (   .197)I                                     I
                     (  4.059@I                                     I
                               I                                    I
E28 -  AUT2               .545*I                                    I
                          .082 I                                    I
                         6.654@I                                    I
                     (   .134)I                                     I
                     (  4.064@I                                     I
                               I                                    I
E29 -  AUT3               .300*I                                    I
                          .079 I                                    I
                         3.818@I                                    I
                     (   .156)I                                     I
                     (  1.919)I                                     I
                               I                                    I
E30 -  SUP1               .639*I                                    I
                          .081 I                                    I
                         7.920@I                                    I
                     (   .102)I                                     I
                     (  6.282@I                                     I
                               I                                    I
E31 -  SUP2               .453*I                                    I
                          .063 I                                    I
                         7.230@I                                    I
                     (   .076)I                                     I
                     (  5.959@I                                     I
                               I                                    I
E32 -  SUP3               .514*I                                    I
                          .068 I                                    I
                         7.603@I                                    I
                     (   .130)I                                     I
                     (  3.951@I                                     I
                               I                                    I
E33 -  SUP4               .983*I                                    I
                          .106 I                                    I
                         9.250@I                                    I
                     (   .225)I                                     I
                     (  4.366@I                                     I
                               I                                    I
```



```
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
```

```
 ---------------------------------------------

E34 -  SUP5              .574*I                              I
                         .070 I                              I
                        8.190@I                              I
                     (   .098)I                              I
                     (  5.882@I                              I
                              I                              I
E35 -PEER1               .374*I                              I
                         .061 I                              I
                        6.086@I                              I
                     (   .107)I                              I
                     (  3.488@I                              I
                              I                              I
E36 -PEER2               .302*I                              I
                         .062 I                              I
                        4.845@I                              I
                     (   .090)I                              I
                     (  3.340@I                              I
                              I                              I
E37 -PEER3               .670*I                              I
                         .079 I                              I
                        8.445@I                              I
                     (   .146)I                              I
                     (  4.595@I                              I
                              I                              I
E38 -SACT1               .359*I                              I
                         .044 I                              I
                        8.093@I                              I
                     (   .070)I                              I
                     (  5.112@I                              I
                              I                              I
E39 -SACT2               .274*I                              I
                         .045 I                              I
                        6.038@I                              I
                     (   .055)I                              I
                     (  5.004@I                              I
                              I                              I
E40 -SACT3               .289*I                              I
                         .045 I                              I
                        6.387@I                              I
                     (   .050)I                              I
                     (  5.730@I                              I
                              I                              I
E41 -DACT1               .455*I                              I
                         .056 I                              I
                        8.195@I                              I
                     (   .097)I                              I
                     (  4.693@I                              I
                              I                              I
E42 -DACT2               .141*I                              I
                         .043 I                              I
                        3.285@I                              I
                     (   .061)I                              I
                     (  2.302@I                              I
                              I                              I
E43 -DACT3               .398*I                              I
                         .050 I                              I
                        7.993@I                              I
                     (   .104)I                              I
                     (  3.826@I                              I
                              I                              I
```

```
17-May-07      PAGE : 17  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

               V                               F
              ---                             ---
                             I F2  -   F2              -.154*I
                             I F1  -   F1               .078 I
                             I                        -1.986@I
                             I                      (   .087)I
                             I                      ( -1.777)I
                             I                               I
                             I F3  -   F3              -.253*I
                             I F1  -   F1               .073 I
                             I                        -3.451@I
                             I                      (   .081)I
                             I                      ( -3.128@I
                             I                               I
                             I F4  -   F4              -.259*I
                             I F1  -   F1               .074 I
                             I                        -3.510@I
                             I                      (   .082)I
                             I                      ( -3.175@I
                             I                               I
                             I F5  -   F5               .519*I
                             I F1  -   F1               .063 I
                             I                         8.252@I
                             I                      (   .076)I
                             I                      (  6.828@I
                             I                               I
                             I F6  -   F6               .419*I
```

```
I F1  -   F1               .068 I
I                         6.145@I
I                      (   .080)I
I                      (  5.260@I
I                               I
I F3  -   F3               .406*I
I F2  -   F2               .065 I
I                         6.264@I
I                      (   .082)I
I                      (  4.937@I
I                               I
I F4  -   F4               .331*I
I F2  -   F2               .070 I
I                         4.761@I
I                      (   .084)I
I                      (  3.923@I
I                               I
I F5  -   F5              -.029*I
I F2  -   F2               .080 I
I                         -.361 I
I                      (   .096)I
I                      (  -.302)I
I                               I
I F6  -   F6               .094*I
I F2  -   F2               .078 I
I                         1.202 I
I                      (   .086)I
I                      (  1.095)I
I                               I
I F4  -   F4               .694*I
I F3  -   F3               .042 I
I                        16.542@I
I                      (   .050)I
I                      ( 13.805@I
I                               I
I F5  -   F5              -.302*I
I F3  -   F3               .072 I
I                        -4.168@I
I                      (   .086)I
I                      ( -3.506@I
I                               I
I F6  -   F6              -.097*I
I F3  -   F3               .077 I
I                        -1.257 I
I                      (   .085)I
I                      ( -1.134)I
I                               I
```

```
17-May-07      PAGE : 18  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

                               I F5  -   F5              -.273*I
                               I F4  -   F4               .074 I
                               I                        -3.669@I
                               I                      (   .092)I
                               I                      ( -2.979@I
                               I                               I
                               I F6  -   F6              -.134*I
                               I F4  -   F4               .077 I
                               I                        -1.739 I
                               I                      (   .092)I
                               I                      ( -1.459)I
                               I                               I
                               I F6  -   F6               .625*I
                               I F5  -   F5               .055 I
                               I                        11.426@I
                               I                      (   .091)I
                               I                      (  6.903@I
                               I                               I
```

```
17-May-07      PAGE : 19  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 STANDARDIZED SOLUTION:                                               R-SQUARED


LOAD1   =V19 =   .512*F1    + .859 E19                                   .262
LOAD2   =V20 =   .804*F1    + .595 E20                                   .646
LOAD3   =V21 =   .842*F1    + .540 E21                                   .709
LOAD4   =V22 =   .692*F1    + .722 E22                                   .479
LOAD5   =V23 =   .791*F1    + .611 E23                                   .626
  AUT1  =V27 =   .791*F2    + .612 E27                                   .626
  AUT2  =V28 =   .853*F2    + .522 E28                                   .728
  AUT3  =V29 =   .924*F2    + .382 E29                                   .854
  SUP1  =V30 =   .884*F3    + .468 E30                                   .781
  SUP2  =V31 =   .909*F3    + .417 E31                                   .826
  SUP3  =V32 =   .897*F3    + .443 E32                                   .804
```

```
  SUP4  =V33 =   .749*F3    + .662 E33                                       .561
  SUP5  =V34 =   .870*F3    + .494 E34                                       .756
PEER1   =V35 =   .902*F4    + .432 E35                                       .813
PEER2   =V36 =   .927*F4    + .375 E36                                       .859
PEER3   =V37 =   .810*F4    + .586 E37                                       .656
SACT1   =V38 =   .745*F5    + .667 E38                                       .555
SACT2   =V39 =   .847*F5    + .532 E39                                       .717
SACT3   =V40 =   .834*F5    + .551 E40                                       .696
DACT1   =V41 =   .737*F6    + .676 E41                                       .543
DACT2   =V42 =   .918*F6    + .397 E42                                       .842
DACT3   =V43 =   .751*F6    + .660 E43                                       .564
```

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17-May-07      PAGE : 20  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

                V                                 F
               ---                               ---
                              I F2  -   F2              -.154*I
                              I F1  -   F1                    I
                              I                               I
                              I F3  -   F3              -.253*I
                              I F1  -   F1                    I
                              I                               I
                              I F4  -   F4              -.259*I
                              I F1  -   F1                    I
                              I                               I
                              I F5  -   F5               .519*I
                              I F1  -   F1                    I
                              I                               I
                              I F6  -   F6               .419*I
                              I F1  -   F1                    I
                              I                               I
                              I F3  -   F3               .406*I
                              I F2  -   F2                    I
                              I                               I
                              I F4  -   F4               .331*I
                              I F2  -   F2                    I
                              I                               I
                              I F5  -   F5              -.029*I
                              I F2  -   F2                    I
                              I                               I
                              I F6  -   F6               .094*I
                              I F2  -   F2                    I
                              I                               I
                              I F4  -   F4               .694*I
                              I F3  -   F3                    I
                              I                               I
                              I F5  -   F5              -.302*I
                              I F3  -   F3                    I
                              I                               I
                              I F6  -   F6              -.097*I
                              I F3  -   F3                    I
                              I                               I
                              I F5  -   F5              -.273*I
                              I F4  -   F4                    I
                              I                               I
                              I F6  -   F6              -.134*I
                              I F4  -   F4                    I
                              I                               I


                              I F6  -   F6               .625*I
                              I F5  -   F5                    I
                              I                               I
```

```
-------------------------------------------------------------------------------
                          E N D    O F    M E T H O D
-------------------------------------------------------------------------------
```

```
17-May-07      PAGE : 21  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                    =      .837
 RELIABILITY COEFFICIENT RHO         =      .939

 STANDARDIZED FACTOR LOADINGS FOR THE FACTOR THAT GENERATES
 MAXIMAL RELIABILITY FOR THE UNIT-WEIGHT COMPOSITE
 BASED ON THE MODEL (RHO):
 LOAD1     LOAD2     LOAD3     LOAD4     LOAD5       AUT1
     .236      .306      .327      .283      .320      .491
```

AUT2	AUT3	SUP1	SUP2	SUP3	SUP4
.509	.513	.631	.644	.651	.540
SUP5	PEER1	PEER2	PEER3	SACT1	SACT2
.595	.522	.572	.530	.355	.387
SACT3	DACT1	DACT2	DACT3		
.368	.327	.314	.283		

PARAMETER ESTIMATES APPEAR IN ORDER,
NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.

RESIDUAL COVARIANCE MATRIX (S-SIGMA) :

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.000				
LOAD2	V20	.088	.000			
LOAD3	V21	-.026	-.034	.000		
LOAD4	V22	-.069	.003	.057	.000	
LOAD5	V23	.006	.001	.003	-.027	.000
AUT1	V27	-.040	-.079	-.020	.058	-.071
AUT2	V28	.086	-.044	-.035	.034	-.021
AUT3	V29	-.028	-.006	.039	.137	.027
SUP1	V30	.143	.065	.008	.094	-.087
SUP2	V31	-.067	.019	-.013	.109	-.085
SUP3	V32	-.019	-.004	-.072	-.004	-.048
SUP4	V33	.124	.073	.021	-.019	.062
SUP5	V34	-.027	.019	.015	.144	-.068
PEER1	V35	.024	-.047	-.035	-.034	.024
PEER2	V36	.064	-.007	-.009	.010	.059
PEER3	V37	.012	-.097	-.035	.019	.002
SACT1	V38	.044	.084	.028	.016	.054
SACT2	V39	-.045	-.031	-.019	-.045	.017
SACT3	V40	-.010	-.014	-.007	.001	-.032
DACT1	V41	.037	.002	-.046	-.041	.001
DACT2	V42	-.053	.002	-.006	-.026	.031
DACT3	V43	.039	.039	.036	.031	.033

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	.000				
AUT2	V28	-.016	.000			
AUT3	V29	-.005	.017	.000		
SUP1	V30	-.092	-.036	-.144	.000	
SUP2	V31	.098	.029	-.006	.030	.000
SUP3	V32	-.085	.065	-.115	.108	-.037
SUP4	V33	-.188	.117	-.206	-.087	-.040
SUP5	V34	.225	.214	.128	-.113	.054
PEER1	V35	.190	.047	-.052	-.059	.082
PEER2	V36	.088	-.044	-.117	-.074	-.096
PEER3	V37	.151	.021	-.083	-.055	.009
SACT1	V38	.155	-.013	.194	.195	.069
SACT2	V39	.024	-.189	-.014	.023	-.053
SACT3	V40	.051	-.164	.077	.044	.010
DACT1	V41	.000	-.014	.037	.101	-.034
DACT2	V42	-.057	.057	.017	.022	-.145
DACT3	V43	-.074	.035	-.060	.026	-.018

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	.000				
SUP4	V33	.048	.000			
SUP5	V34	-.089	.124	.000		
PEER1	V35	-.007	.023	.347	.000	
PEER2	V36	-.045	-.054	.115	.003	.000
PEER3	V37	-.003	.080	.125	-.026	.008
SACT1	V38	.010	-.097	.022	.005	.059
SACT2	V39	-.035	.000	-.024	-.030	-.009
SACT3	V40	-.012	-.196	-.002	-.014	.029
DACT1	V41	.046	.034	.060	.012	-.026
DACT2	V42	.042	-.089	-.053	-.081	-.084
DACT3	V43	-.016	-.012	-.029	.073	.083

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	.000				
SACT1	V38	-.008	.000			
SACT2	V39	-.020	-.001	.000		
SACT3	V40	-.069	-.012	.009	.000	
DACT1	V41	.043	.023	.063	.068	.000
DACT2	V42	.009	-.073	-.073	-.071	.006
DACT3	V43	.132	-.031	.012	.019	-.039

		DACT2 V42	DACT3 V43
DACT2	V42	.000	
DACT3	V43	.039	.000

AVERAGE ABSOLUTE RESIDUAL = .0490
AVERAGE OFF-DIAGONAL ABSOLUTE RESIDUAL = .0537

17-May-07 PAGE : 22 EQS Licensee:
TITLE: IV Measurement Model: sample1

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.000				
LOAD2	V20	.094	.000			
LOAD3	V21	-.028	-.035	.000		
LOAD4	V22	-.081	.003	.065	.000	
LOAD5	V23	.006	.001	.003	-.030	.000
AUT1	V27	-.030	-.060	-.015	.047	-.053
AUT2	V28	.062	-.032	-.025	.027	-.015
AUT3	V29	-.020	-.005	.028	.109	.019
SUP1	V30	.086	.039	.005	.061	-.051
SUP2	V31	-.046	.013	-.009	.081	-.057
SUP3	V32	-.012	-.002	-.044	-.002	-.030
SUP4	V33	.088	.052	.015	-.015	.043
SUP5	V34	-.019	.013	.010	.108	-.046
PEER1	V35	.020	-.037	-.027	-.029	.019
PEER2	V36	.050	-.005	-.007	.008	.045
PEER3	V37	.009	-.074	-.026	.016	.002
SACT1	V38	.047	.089	.030	.018	.057
SACT2	V39	-.045	-.031	-.018	-.049	.016
SACT3	V40	-.011	-.015	-.007	.002	-.033
DACT1	V41	.039	.002	-.047	-.046	.001
DACT2	V42	-.054	.002	-.006	-.029	.031
DACT3	V43	.040	.040	.036	.034	.033

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	.000				
AUT2	V28	-.008	.000			
AUT3	V29	-.003	.008	.000		
SUP1	V30	-.039	-.014	-.059	.000	
SUP2	V31	.048	.013	-.003	.012	.000
SUP3	V32	-.038	.028	-.049	.038	-.015
SUP4	V33	-.095	.056	-.100	-.035	-.018
SUP5	V34	.110	.099	.060	-.044	.024
PEER1	V35	.108	.025	-.029	-.026	.042
PEER2	V36	.049	-.023	-.062	-.032	-.048
PEER3	V37	.082	.011	-.043	-.024	.005
SACT1	V38	.118	-.009	.141	.116	.047
SACT2	V39	.017	-.126	-.009	.012	-.033
SACT3	V40	.038	-.115	.055	.026	.007
DACT1	V41	.000	-.010	.027	.059	-.022
DACT2	V42	-.041	.038	.012	.012	-.094
DACT3	V43	-.054	.024	-.042	.015	-.012

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	.000				
SUP4	V33	.020	.000			
SUP5	V34	-.036	.057	.000		
PEER1	V35	-.003	.012	.179	.000	
PEER2	V36	-.020	-.028	.057	.002	.000
PEER3	V37	-.001	.040	.061	-.015	.005
SACT1	V38	.006	-.068	.015	.004	.046
SACT2	V39	-.021	.000	-.016	-.022	-.006
SACT3	V40	-.007	-.136	-.001	-.011	.022
DACT1	V41	.028	.024	.040	.009	-.020
DACT2	V42	.025	-.060	-.034	-.061	-.062
DACT3	V43	-.010	-.008	-.019	.056	.062

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	.000				
SACT1	V38	-.006	.000			
SACT2	V39	-.014	-.001	.000		
SACT3	V40	-.051	-.013	.009	.000	
DACT1	V41	.032	.024	.061	.070	.000
DACT2	V42	.006	-.073	-.068	-.070	.006
DACT3	V43	.097	-.032	.012	.019	-.039

		DACT2 V42	DACT3 V43
DACT2	V42	.000	
DACT3	V43	.038	.000

AVERAGE ABSOLUTE STANDARDIZED RESIDUAL = .0327
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUAL = .0358

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V35, V34	.179	11	V34, V22	.108
2	V38, V29	.141	12	V33, V29	-.100
3	V40, V33	-.136	13	V34, V28	.099
4	V39, V28	-.126	14	V43, V37	.097
5	V38, V27	.118	15	V33, V27	-.095
6	V38, V30	.116	16	V20, V19	.094

```
      7     V40, V28       -.115      17     V42, V31       -.094
      8     V34, V27        .110      18     V38, V20        .089
      9     V29, V22        .109      19     V33, V19        .088
     10     V35, V27        .108      20     V30, V19        .086

17-May-07      PAGE : 23  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 DISTRIBUTION OF STANDARDIZED RESIDUALS


    ----------------------------------------
    !                                      !
 140-                                      -
    !                 *                    !
    !                 *                    !
    !                 *                    !
    !                 *  *                 !           RANGE      FREQ PERCENT
 105-                 *  *                 -
    !                 *  *                 !    1   -0.5  -  --       0    .00%
    !                 *  *                 !    2   -0.4  -  -0.5     0    .00%
    !                 *  *                 !    3   -0.3  -  -0.4     0    .00%
    !                 *  *                 !    4   -0.2  -  -0.3     0    .00%
  70-                 *  *                 -    5   -0.1  -  -0.2     3   1.19%
    !                 *  *                 !    6    0.0  -  -0.1   131  51.78%
    !                 *  *                 !    7    0.1  -   0.0   111  43.87%
    !                 *  *                 !    8    0.2  -   0.1     8   3.16%
    !                 *  *                 !    9    0.3  -   0.2     0    .00%
  35-                 *  *                 -    A    0.4  -   0.3     0    .00%
    !                 *  *                 !    B    0.5  -   0.4     0    .00%
    !                 *  *                 !    C     ++  -   0.5     0    .00%
    !                 *  *                 !    -------------------------------
    !                 *  *  *              !           TOTAL       253 100.00%
    ----------------------------------------
       1  2  3  4  5  6  7  8  9  A  B  C    EACH "*" REPRESENTS    7 RESIDUALS

17-May-07      PAGE : 24  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


LOAD1   =V19 =    .583*F1    + 1.000 E19
                  .064
                 9.079@
              (   .070)
              (  8.387@

LOAD2   =V20 =    .764*F1    + 1.000 E20
                  .059
                12.870@
              (   .060)
              ( 12.673@

LOAD3   =V21 =    .828*F1    + 1.000 E21
                  .058
                14.225@
              (   .057)
              ( 14.526@

LOAD4   =V22 =    .652*F1    + 1.000 E22
                  .057
                11.526@
              (   .065)
              ( 10.066@

LOAD5   =V23 =    .810*F1    + 1.000 E23
                  .059
                13.797@
              (   .056)
              ( 14.381@

  AUT1  =V27 =   1.124*F2    + 1.000 E27
                  .082
                13.679@
              (   .093)
              ( 12.103@

  AUT2  =V28 =   1.232*F2    + 1.000 E28
                  .085
                14.423@
              (   .091)
              ( 13.521@

  AUT3  =V29 =   1.223*F2    + 1.000 E29
```

```
                  .084
                14.578@
              (   .096)
              ( 12.786@

  SUP1  =V30 =   1.486*F3    + 1.000 E30
                  .099
                14.954@
              (   .081)
              ( 18.284@

  SUP2  =V31 =   1.324*F3    + 1.000 E31
                  .086
                15.448@
              (   .085)
              ( 15.620@

  SUP3  =V32 =   1.456*F3    + 1.000 E32
                  .093
                15.723@
              (   .080)
              ( 18.147@

  SUP4  =V33 =   1.073*F3    + 1.000 E33
                  .091
                11.856@
              (   .099)
              ( 10.864@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)


17-May-07      PAGE : 25  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SUP5  =V34 =   1.215*F3    + 1.000 E34
                  .089
                13.643@
              (   .089)
              ( 13.699@

PEER1   =V35 =   1.103*F4    + 1.000 E35
                  .075
                14.670@
              (   .085)
              ( 13.009@

PEER2   =V36 =   1.243*F4    + 1.000 E36
                  .073
                16.973@
              (   .077)
              ( 16.127@

PEER3   =V37 =   1.172*F4    + 1.000 E37
                  .078
                15.029@
              (   .084)
              ( 13.959@

SACT1   =V38 =    .778*F5    + 1.000 E38
                  .059
                13.100@
              (   .063)
              ( 12.433@

SACT2   =V39 =    .914*F5    + 1.000 E39
                  .061
                14.893@
              (   .059)
              ( 15.380@

SACT3   =V40 =    .820*F5    + 1.000 E40
                  .059
                13.803@
              (   .059)
              ( 13.956@

DACT1   =V41 =    .846*F6    + 1.000 E41
                  .060
                14.119@
              (   .061)
              ( 13.917@

DACT2   =V42 =    .840*F6    + 1.000 E42
                  .063
                13.324@
              (   .072)
              ( 11.691@

DACT3   =V43 =    .744*F6    + 1.000 E43
                  .064
                11.573@
              (   .086)
              (  8.624@
```

```
17-May-07      PAGE : 26  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 V                                  F
                ---                                ---
                              I F1  -   F1              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F2  -   F2              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F3  -   F3              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F4  -   F4              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F5  -   F5              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F6  -   F6              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
```

```
17-May-07      PAGE : 27  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 E                                  D
                ---                                ---
E19 -LOAD1               .580*I                               I
                         .062 I                               I
                        9.322@I                               I
                     (   .066)I                               I
                     (  8.775@I                               I
                              I                               I
E20 -LOAD2               .355*I                               I
                         .044 I                               I
                        8.060@I                               I
                     (   .060)I                               I
                     (  5.910@I                               I
                              I                               I
E21 -LOAD3               .278*I                               I
                         .039 I                               I
                        7.082@I                               I
                     (   .040)I                               I
                     (  7.042@I                               I
                              I                               I
E22 -LOAD4               .373*I                               I
                         .043 I                               I
                        8.668@I                               I
                     (   .068)I                               I
                     (  5.492@I                               I
                              I                               I
E23 -LOAD5               .305*I                               I
                         .041 I                               I
                        7.442@I                               I
                     (   .042)I                               I
                     (  7.304@I                               I
                              I                               I
E27 -  AUT1              .588*I                               I
                         .082 I                               I
                        7.161@I                               I
                     (   .119)I                               I
                     (  4.933@I                               I
                              I                               I
```

```
E28 -  AUT2              .548*I                                 I
                         .087 I                                 I
                        6.279@I                                 I
                     (   .173)I                                 I
                     (  3.166@I                                 I
                              I                                 I
E29 -  AUT3              .510*I                                 I
                         .084 I                                 I
                        6.071@I                                 I
                     (   .159)I                                 I
                     (  3.203@I                                 I
                              I                                 I
E30 -  SUP1              .784*I                                 I
                         .100 I                                 I
                        7.847@I                                 I
                     (   .138)I                                 I
                     (  5.663@I                                 I
                              I                                 I
E31 -  SUP2              .529*I                                 I
                         .071 I                                 I
                        7.460@I                                 I
                     (   .092)I                                 I
                     (  5.753@I                                 I
                              I                                 I
E32 -  SUP3              .581*I                                 I
                         .081 I                                 I
                        7.204@I                                 I
                     (   .117)I                                 I
                     (  4.961@I                                 I
                              I                                 I
E33 -  SUP4              .978*I                                 I
                         .107 I                                 I
                        9.117@I                                 I
                     (   .203)I                                 I
                     (  4.811@I                                 I
                              I                                 I
```


MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)

```
----------------------------------------------

E34 -  SUP5              .774*I                                 I
                         .091 I                                 I
                        8.556@I                                 I
                     (   .139)I                                 I
                     (  5.561@I                                 I
                              I                                 I
E35 -PEER1               .460*I                                 I
                         .060 I                                 I
                        7.629@I                                 I
                     (   .100)I                                 I
                     (  4.615@I                                 I
                              I                                 I
E36 -PEER2               .226*I                                 I
                         .053 I                                 I
                        4.297@I                                 I
                     (   .060)I                                 I
                     (  3.771@I                                 I
                              I                                 I
E37 -PEER3               .461*I                                 I
                         .063 I                                 I
                        7.261@I                                 I
                     (   .077)I                                 I
                     (  5.945@I                                 I
                              I                                 I
E38 -SACT1               .338*I                                 I
                         .044 I                                 I
                        7.726@I                                 I
                     (   .059)I                                 I
                     (  5.698@I                                 I
                              I                                 I
E39 -SACT2               .260*I                                 I
                         .044 I                                 I
                        5.897@I                                 I
                     (   .064)I                                 I
                     (  4.038@I                                 I
                              I                                 I
E40 -SACT3               .304*I                                 I
                         .043 I                                 I
                        7.138@I                                 I
                     (   .049)I                                 I
                     (  6.221@I                                 I
                              I                                 I
E41 -DACT1               .264*I                                 I
                         .046 I                                 I
                        5.802@I                                 I
                     (   .051)I                                 I
                     (  5.190@I                                 I
                              I                                 I
E42 -DACT2               .343*I                                 I
                         .051 I                                 I
                        6.751@I                                 I
                     (   .098)I                                 I
                     (  3.485@I                                 I
                              I                                 I
```

```
E43 -DACT3               .455*I                                  I
                          .056 I                                  I
                         8.156@I                                  I
                     (   .120)I                                   I
                     (  3.808@I                                   I
                               I                                  I


17-May-07      PAGE : 29  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                F
               ---                              ---
                              I F2  -   F2              -.091*I
                              I F1  -   F1               .079 I
                              I                        -1.150 I
                              I                      (   .092)I
                              I                      (  -.984)I
                              I                               I
                              I F3  -   F3              -.166*I
                              I F1  -   F1               .076 I
                              I                        -2.181@I
                              I                      (   .088)I
                              I                      ( -1.877)I
                              I                               I
                              I F4  -   F4              -.117*I
                              I F1  -   F1               .077 I
                              I                        -1.514 I
                              I                      (   .089)I
                              I                      ( -1.316)I
                              I                               I
                              I F5  -   F5               .643*I
                              I F1  -   F1               .051 I
                              I                        12.529@I
                              I                      (   .060)I
                              I                      ( 10.638@I
                              I                               I
                              I F6  -   F6               .590*I
                              I F1  -   F1               .057 I
                              I                        10.351@I
                              I                      (   .063)I
                              I                      (  9.351@I
                              I                               I
                              I F3  -   F3               .473*I
                              I F2  -   F2               .062 I
                              I                         7.604@I
                              I                      (   .068)I
                              I                      (  6.914@I
                              I                               I
                              I F4  -   F4               .393*I
                              I F2  -   F2               .067 I
                              I                         5.847@I
                              I                      (   .078)I
                              I                      (  5.060@I
                              I                               I
                              I F5  -   F5               .003*I
                              I F2  -   F2               .080 I
                              I                          .033 I
                              I                      (   .092)I
                              I                      (   .029)I
                              I                               I
                              I F6  -   F6              -.116*I
                              I F2  -   F2               .080 I
                              I                        -1.445 I
                              I                      (   .090)I
                              I                      ( -1.292)I
                              I                               I
                              I F4  -   F4               .581*I
                              I F3  -   F3               .053 I
                              I                        11.026@I
                              I                      (   .077)I
                              I                      (  7.554@I
                              I                               I
                              I F5  -   F5              -.084*I
                              I F3  -   F3               .078 I
                              I                        -1.082 I
                              I                      (   .089)I
                              I                      (  -.949)I
                              I                               I
                              I F6  -   F6              -.104*I
                              I F3  -   F3               .079 I
                              I                        -1.329 I
                              I                      (   .089)I
                              I                      ( -1.167)I
                              I                               I


17-May-07      PAGE : 30  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
```

```
 COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

                              I F5  -   F5               -.127*I
                              I F4  -   F4                .077 I
                              I                         -1.638 I
                              I                        (   .089)I
                              I                        ( -1.421)I
                              I                                I
                              I F6  -   F6               -.122*I
                              I F4  -   F4                .078 I
                              I                         -1.559 I
                              I                        (   .088)I
                              I                        ( -1.381)I
                              I                                I
                              I F6  -   F6                .699*I
                              I F5  -   F5                .048 I
                              I                         14.554@I
                              I                        (   .069)I
                              I                        ( 10.088@I
                              I                                I

17-May-07      PAGE : 31  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 STANDARDIZED SOLUTION:                                            R-SQUARED


LOAD1   =V19 =   .608*F1    + .794 E19                                .369
LOAD2   =V20 =   .789*F1    + .615 E20                                .622
LOAD3   =V21 =   .843*F1    + .538 E21                                .711
LOAD4   =V22 =   .730*F1    + .684 E22                                .532
LOAD5   =V23 =   .826*F1    + .563 E23                                .683
  AUT1  =V27 =   .826*F2    + .564 E27                                .682
  AUT2  =V28 =   .857*F2    + .515 E28                                .735
  AUT3  =V29 =   .863*F2    + .504 E29                                .746
  SUP1  =V30 =   .859*F3    + .512 E30                                .738
  SUP2  =V31 =   .876*F3    + .481 E31                                .768
  SUP3  =V32 =   .886*F3    + .464 E32                                .785
  SUP4  =V33 =   .735*F3    + .678 E33                                .541
  SUP5  =V34 =   .810*F3    + .586 E34                                .656
PEER1   =V35 =   .852*F4    + .524 E35                                .726
PEER2   =V36 =   .934*F4    + .358 E36                                .872
PEER3   =V37 =   .865*F4    + .501 E37                                .749
SACT1   =V38 =   .801*F5    + .599 E38                                .641
SACT2   =V39 =   .873*F5    + .487 E39                                .763
SACT3   =V40 =   .830*F5    + .558 E40                                .689
DACT1   =V41 =   .855*F6    + .519 E41                                .730
DACT2   =V42 =   .820*F6    + .572 E42                                .673
DACT3   =V43 =   .741*F6    + .672 E43                                .549

17-May-07      PAGE : 32  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

                V                               F
               ---                             ---
                              I F2  -   F2               -.091*I
                              I F1  -   F1                     I
                              I                                I
                              I F3  -   F3               -.166*I
                              I F1  -   F1                     I
                              I                                I
                              I F4  -   F4               -.117*I
                              I F1  -   F1                     I
                              I                                I
                              I F5  -   F5                .643*I
                              I F1  -   F1                     I
                              I                                I
                              I F6  -   F6                .590*I
                              I F1  -   F1                     I
                              I                                I
                              I F3  -   F3                .473*I
                              I F2  -   F2                     I
                              I                                I
                              I F4  -   F4                .393*I
                              I F2  -   F2                     I
                              I                                I
                              I F5  -   F5                .003*I
                              I F2  -   F2                     I
                              I                                I
                              I F6  -   F6               -.116*I
                              I F2  -   F2                     I
                              I                                I
                              I F4  -   F4                .581*I
                              I F3  -   F3                     I
                              I                                I
                              I F5  -   F5               -.084*I
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I F3  -   F3                    I
I                               I
I F6  -   F6              -.104*I
I F3  -   F3                    I
I                               I
I F5  -   F5              -.127*I
I F4  -   F4                    I
I                               I
I F6  -   F6              -.122*I
I F4  -   F4                    I
I                               I


I F6  -   F6               .699*I
I F5  -   F5                    I
I                               I
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                          E N D    O F    M E T H O D
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 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 STATISTICS FOR MULTIPLE POPULATION ANALYSIS



 GOODNESS OF FIT SUMMARY FOR METHOD = ML

 INDEPENDENCE MODEL CHI-SQUARE        =    6483.604 ON   462 DEGREES OF FREEDOM

 INDEPENDENCE AIC =    5559.604   INDEPENDENCE CAIC =    3252.394
        MODEL AIC =      41.149          MODEL CAIC =   -1896.508

 CHI-SQUARE =      817.149 BASED ON     388 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 FIT INDICES
 -----------
 BENTLER-BONETT     NORMED FIT INDEX =      .874
 BENTLER-BONETT NON-NORMED FIT INDEX =      .915
 COMPARATIVE FIT INDEX (CFI)         =      .929
 BOLLEN'S          (IFI) FIT INDEX   =      .930
 MCDONALD'S        (MFI) FIT INDEX   =      .586
 JORESKOG-SORBOM'S  GFI  FIT INDEX   =      .846
 JORESKOG-SORBOM'S AGFI  FIT INDEX   =      .800
 ROOT MEAN-SQUARE RESIDUAL (RMR)     =      .077
 STANDARDIZED RMR                    =      .050
 ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .074
 90% CONFIDENCE INTERVAL OF RMSEA  (        .067,          .081)


 GOODNESS OF FIT SUMMARY FOR METHOD = ROBUST

 ROBUST INDEPENDENCE MODEL CHI-SQUARE =    4658.009 ON   462 DEGREES OF FREEDOM

 INDEPENDENCE AIC =    3734.009   INDEPENDENCE CAIC =    1426.799
        MODEL AIC =    -212.638          MODEL CAIC =   -2150.295

 SATORRA-BENTLER SCALED CHI-SQUARE =    563.3618 ON     388 DEGREES OF FREEDOM
 PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

 FIT INDICES
 -----------
 BENTLER-BONETT     NORMED FIT INDEX =      .879
 BENTLER-BONETT NON-NORMED FIT INDEX =      .950
 COMPARATIVE FIT INDEX (CFI)         =      .958
 BOLLEN'S          (IFI) FIT INDEX   =      .959
 MCDONALD'S        (MFI) FIT INDEX   =      .804
 ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .048
 90% CONFIDENCE INTERVAL OF RMSEA  (        .039,          .056)


                       ITERATIVE SUMMARY

                   PARAMETER
 ITERATION          ABS CHANGE         ALPHA                FUNCTION
     1               .582288        1.00000              5.17646
     2               .057279        1.00000              2.09871
     3               .019002        1.00000              2.05110
     4               .004030        1.00000              2.04833
     5               .001412        1.00000              2.04803
     6               .000452        1.00000              2.04799
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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

WALD TEST (FOR ADDING EQUALITY CONSTRAINTS)
ROBUST INFORMATION MATRIX USED IN THIS WALD TEST
MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS

THE CONSTRAINTS COMPRISE EQUALITY OF THESE 59
PARAMETERS BETWEEN GROUP 1 AND GROUP 2:

F2,F1	F3,F1	F3,F2	F4,F1	F4,F2	F4,F3	F5,F1	F5,F2
F5,F3	F5,F4	F6,F1	F6,F2	F6,F3	F6,F4	F6,F5	E19,E19
E20,E20	E21,E21	E22,E22	E23,E23	E27,E27	E28,E28	E29,E29	E30,E30
E31,E31	E32,E32	E33,E33	E34,E34	E35,E35	E36,E36	E37,E37	E38,E38
E39,E39	E40,E40	E41,E41	E42,E42	E43,E43	V19,F1	V20,F1	V21,F1
V22,F1	V23,F1	V27,F2	V28,F2	V29,F2	V30,F3	V31,F3	V32,F3
V33,F3	V34,F3	V35,F4	V36,F4	V37,F4	V38,F5	V39,F5	V40,F5
V41,F6	V42,F6	V43,F6					

		CUMULATIVE MULTIVARIATE STATISTICS			UNIVARIATE INCREMENT	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROBABILITY	CHI-SQUARE	PROBABILITY
1	E28,E28	.001	1	.980	.001	.980
2	E33,E33	.002	2	.999	.001	.976
3	V32,F3	.003	3	1.000	.001	.972
4	F6,F3	.008	4	1.000	.005	.945
5	V40,F5	.012	5	1.000	.004	.948
6	V20,F1	.033	6	1.000	.022	.883
7	F6,F4	.068	7	1.000	.034	.853
8	V28,F2	.113	8	1.000	.045	.831
9	V22,F1	.169	9	1.000	.056	.813
10	E39,E39	.224	10	1.000	.055	.814
11	E40,E40	.271	11	1.000	.047	.829
12	V30,F3	.328	12	1.000	.057	.811
13	V43,F6	.401	13	1.000	.072	.788
14	F5,F2	.479	14	1.000	.079	.779
15	E38,E38	.604	15	1.000	.124	.724
16	E20,E20	.749	16	1.000	.145	.703
17	V37,F4	.898	17	1.000	.149	.699
18	V27,F2	1.079	18	1.000	.180	.671
19	V33,F3	1.261	19	1.000	.182	.669
20	F2,F1	1.515	20	1.000	.253	.615
21	V42,F6	1.776	21	1.000	.261	.609
22	V19,F1	2.161	22	1.000	.385	.535
23	E21,E21	2.566	23	1.000	.405	.525
24	E32,E32	3.056	24	1.000	.490	.484
25	F4,F2	3.589	25	1.000	.532	.466
26	F3,F2	3.960	26	1.000	.372	.542
27	F3,F1	4.655	27	1.000	.694	.405
28	V23,F1	5.331	28	1.000	.676	.411
29	E31,E31	6.116	29	1.000	.785	.375
30	E43,E43	6.974	30	1.000	.858	.354
31	E22,E22	7.845	31	1.000	.871	.351
32	E36,E36	8.778	32	1.000	.934	.334
33	E35,E35	9.287	33	1.000	.509	.476
34	F6,F5	10.363	34	1.000	1.077	.299
35	V39,F5	11.237	35	1.000	.873	.350
36	V38,F5	12.415	36	1.000	1.178	.278
37	V21,F1	13.617	37	1.000	1.202	.273
38	F4,F1	14.859	38	1.000	1.242	.265
39	F5,F4	16.126	39	1.000	1.267	.260
40	V29,F2	17.574	40	.999	1.448	.229
41	V34,F3	19.034	41	.999	1.460	.227
42	V31,F3	20.442	42	.998	1.408	.235
43	V41,F6	21.950	43	.997	1.507	.220
44	E30,E30	23.810	44	.994	1.861	.173
45	F5,F1	25.916	45	.990	2.106	.147
46	F6,F1	27.213	46	.988	1.297	.255
47	E27,E27	29.838	47	.976	2.626	.105
48	E29,E29	31.736	48	.966	1.897	.168
49	E34,E34	34.920	49	.936	3.184	.074
50	V35,F4	38.216	50	.888	3.296	.069
51	V36,F4	39.503	51	.879	1.287	.257
52	F4,F3	41.841	52	.842	2.338	.126
53	E19,E19	45.276	53	.766	3.436	.064
54	E37,E37	48.964	54	.669	3.688	.055

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

WALD TEST (FOR DROPPING PARAMETERS)
MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS

		CUMULATIVE MULTIVARIATE STATISTICS			UNIVARIATE INCREMENT	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROBABILITY	CHI-SQUARE	PROBABILITY
1	2, F5,F2	.001	1	.974	.001	.974

2	1,	F5,F2	.132	2	.936	.131	.718
3	1,	F6,F3	1.600	3	.659	1.468	.226
4	1,	F6,F4	3.064	4	.547	1.464	.226
5	2,	F5,F3	4.538	5	.475	1.473	.225
6	2,	F6,F3	5.258	6	.511	.720	.396
7	2,	F6,F4	6.398	7	.494	1.140	.286
8	2,	F4,F1	7.057	8	.530	.659	.417
9	2,	F5,F4	7.527	9	.582	.470	.493
10	2,	F2,F1	9.011	10	.531	1.484	.223
11	2,	F6,F2	10.869	11	.454	1.857	.173
12	2,	F3,F1	13.167	12	.357	2.298	.130

TITLE: IV Measurement Model: sample1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

LAGRANGE MULTIPLIER TEST (FOR ADDING PARAMETERS)

ORDERED UNIVARIATE TEST STATISTICS:

NO	CODE		PARAMETER	CHI-SQUARE	PROB.	HANCOCK 388 DF PROB.	PARAMETER CHANGE	STANDAR-DIZED CHANGE
1	2	12	2, V42,F5	13.211	.000	1.000	-.354	-.346
2	2	12	1, V36,F3	12.036	.001	1.000	-.331	-.226
3	2	12	1, V39,F2	11.855	.001	1.000	-.175	-.178
4	2	12	2, V41,F5	11.779	.001	1.000	.331	.334
5	2	12	1, V41,F5	9.843	.002	1.000	.260	.260
6	2	12	1, V38,F2	9.714	.002	1.000	.156	.173
7	2	12	2, V28,F5	9.086	.003	1.000	-.208	-.144
8	2	12	2, V34,F4	9.052	.003	1.000	.271	.180
9	2	12	2, V34,F2	8.663	.003	1.000	.246	.164
10	2	12	1, V30,F2	7.496	.006	1.000	.204	.119
11	2	12	1, V37,F3	7.145	.008	1.000	.262	.188
12	2	12	1, V42,F5	6.811	.009	1.000	-.222	-.235
13	2	12	1, V36,F1	6.203	.013	1.000	.153	.104
14	2	12	2, V38,F2	5.996	.014	1.000	.123	.127
15	2	12	1, V19,F4	5.638	.018	1.000	-.165	-.161
16	2	12	2, V27,F4	5.606	.018	1.000	.176	.129
17	2	12	1, V23,F2	5.451	.020	1.000	-.134	-.123
18	2	12	1, V34,F4	5.203	.023	1.000	.210	.137
19	2	12	1, V38,F3	5.127	.024	1.000	.118	.131
20	2	12	1, V28,F4	4.940	.026	1.000	.154	.108
21	2	12	1, V43,F2	4.920	.027	1.000	.114	.120
22	2	12	2, V29,F4	4.673	.031	1.000	-.163	-.115
23	2	12	1, V31,F2	4.593	.032	1.000	.141	.087
24	2	12	1, V33,F2	4.489	.034	1.000	-.180	-.120
25	2	12	1, V31,F4	4.227	.040	1.000	-.181	-.112
26	2	12	2, V38,F1	4.216	.040	1.000	.152	.156
27	2	12	1, V34,F2	3.878	.049	1.000	-.137	-.089
28	2	12	1, V36,F5	3.790	.052	1.000	.121	.083
29	2	12	1, V33,F5	3.615	.057	1.000	.158	.105
30	2	12	2, V29,F5	3.514	.061	1.000	.127	.089
31	2	12	2, V39,F2	3.310	.069	1.000	-.093	-.089
32	2	12	1, V41,F1	3.274	.070	1.000	.116	.116
33	2	12	1, V32,F2	3.085	.079	1.000	-.120	-.074
34	2	12	1, V35,F1	3.077	.079	1.000	-.106	-.075
35	2	12	1, V29,F4	2.925	.087	1.000	-.117	-.081
36	2	12	1, V22,F5	2.873	.090	1.000	-.113	-.123
37	2	12	2, V36,F3	2.842	.092	1.000	-.121	-.091
38	2	12	2, V43,F4	2.830	.092	1.000	.094	.094
39	2	12	1, V30,F4	2.792	.095	1.000	-.166	-.097
40	2	12	1, V19,F3	2.531	.112	1.000	-.109	-.106
41	2	12	1, V38,F4	2.516	.113	1.000	.083	.092
42	2	12	2, V22,F2	2.457	.117	1.000	.078	.087
43	2	12	2, V31,F6	2.395	.122	1.000	-.100	-.066
44	2	12	2, V30,F5	2.224	.136	1.000	.112	.065
45	2	12	2, V30,F2	2.224	.136	1.000	-.132	-.076
46	2	12	2, V35,F3	2.164	.141	1.000	.109	.084
47	2	12	1, V28,F5	2.144	.143	1.000	-.096	-.067
48	2	12	2, V42,F4	2.094	.148	1.000	-.078	-.076
49	2	12	1, V35,F6	2.064	.151	1.000	-.083	-.059
50	2	12	2, V29,F3	2.040	.153	1.000	-.115	-.081
51	2	12	1, V37,F5	2.009	.156	1.000	-.101	-.072
52	2	12	1, V41,F3	1.896	.168	1.000	-.074	-.074
53	2	12	1, V23,F6	1.850	.174	1.000	-.089	-.081
54	2	12	1, V35,F3	1.771	.183	1.000	.122	.086
55	2	12	1, V42,F1	1.758	.185	1.000	-.081	-.085
56	2	12	2, V43,F1	1.736	.188	1.000	.102	.102
57	2	12	2, V30,F6	1.697	.193	1.000	.099	.057
58	2	12	2, V28,F3	1.673	.196	1.000	.106	.073
59	2	12	1, V21,F2	1.644	.200	1.000	.059	.064
60	2	12	1, V40,F6	1.619	.203	1.000	-.098	-.101
61	2	12	1, V22,F4	1.618	.203	1.000	.070	.076
62	2	12	1, V42,F2	1.615	.204	1.000	-.063	-.067
63	2	12	2, V33,F5	1.595	.207	1.000	-.099	-.067
64	2	12	2, V36,F2	1.595	.207	1.000	-.076	-.057
65	2	12	2, V30,F4	1.540	.215	1.000	-.118	-.068
66	2	12	2, V29,F1	1.531	.216	1.000	.084	.059
67	2	12	2, V33,F2	1.515	.218	1.000	-.112	-.077
68	2	12	2, V22,F3	1.510	.219	1.000	.060	.068
69	2	12	1, V27,F6	1.480	.224	1.000	-.090	-.061
70	2	12	1, V32,F4	1.466	.226	1.000	.110	.068
71	2	12	2, V39,F1	1.454	.228	1.000	-.095	-.091
72	2	12	2, V27,F5	1.432	.231	1.000	.081	.059
73	2	12	1, V40,F4	1.401	.237	1.000	-.063	-.065
74	2	12	1, V32,F5	1.353	.245	1.000	-.077	-.048
75	2	12	2, V23,F3	1.270	.260	1.000	-.054	-.055

76	2	12	1, V37,F1	1.244	.265	1.000	-.078	-.056
77	2	12	2, V35,F2	1.220	.269	1.000	.071	.055
78	2	12	1, V39,F3	1.212	.271	1.000	-.059	-.060
79	2	12	2, V38,F3	1.185	.276	1.000	.054	.055
80	2	12	1, V29,F5	1.166	.280	1.000	.069	.048
81	2	12	1, V19,F5	1.109	.292	1.000	.089	.087
82	2	12	1, V20,F2	1.103	.294	1.000	.053	.055
83	2	12	2, V37,F6	1.101	.294	1.000	.062	.046
84	2	12	2, V36,F1	1.042	.307	1.000	.055	.041
85	2	12	1, V19,F2	1.038	.308	1.000	-.069	-.068
86	2	12	1, V22,F3	1.019	.313	1.000	.055	.059
87	2	12	1, V30,F6	.976	.323	1.000	-.067	-.039
88	2	12	2, V41,F3	.938	.333	1.000	.050	.050
89	2	12	1, V35,F5	.910	.340	1.000	-.058	-.041
90	2	12	1, V27,F1	.884	.347	1.000	.070	.048
91	2	12	1, V28,F1	.875	.350	1.000	-.062	-.044
92	2	12	2, V42,F3	.862	.353	1.000	-.050	-.048
93	2	12	1, V22,F6	.851	.356	1.000	.056	.061
94	2	12	2, V38,F6	.841	.359	1.000	-.078	-.080
95	2	12	2, V32,F2	.816	.366	1.000	-.072	-.044
96	2	12	1, V40,F2	.816	.366	1.000	.046	.047
97	2	12	1, V20,F5	.813	.367	1.000	.057	.059
98	2	12	1, V19,F6	.808	.369	1.000	.069	.067
99	2	12	2, V32,F1	.803	.370	1.000	-.061	-.037
100	2	12	1, V37,F6	.797	.372	1.000	.060	.043
101	2	12	2, V36,F5	.766	.381	1.000	.047	.035
102	2	12	1, V30,F5	.714	.398	1.000	-.061	-.036
103	2	12	1, V43,F3	.709	.400	1.000	.043	.045
104	2	12	1, V29,F6	.697	.404	1.000	.053	.037
105	2	12	2, V20,F2	.667	.414	1.000	-.041	-.042
106	2	12	1, V33,F1	.666	.415	1.000	-.066	-.044
107	2	12	1, V32,F1	.661	.416	1.000	.053	.033
108	2	12	2, V23,F6	.631	.427	1.000	.053	.054
109	2	12	2, V23,F4	.629	.428	1.000	.038	.039
110	2	12	1, V40,F3	.614	.433	1.000	-.042	-.043
111	2	12	2, V38,F4	.612	.434	1.000	.039	.040
112	2	12	2, V20,F4	.609	.435	1.000	-.039	-.040
113	2	12	1, V38,F6	.605	.437	1.000	.056	.063
114	2	12	2, V41,F1	.581	.446	1.000	-.058	-.058
115	2	12	2, V22,F6	.577	.447	1.000	-.051	-.057
116	2	12	1, V34,F6	.575	.448	1.000	.048	.031
117	2	12	2, V31,F2	.572	.449	1.000	.056	.037
118	2	12	2, V27,F1	.541	.462	1.000	-.050	-.037
119	2	12	1, V36,F2	.535	.465	1.000	-.046	-.031
120	2	12	1, V33,F4	.531	.466	1.000	.082	.055
121	2	12	1, V36,F6	.527	.468	1.000	.043	.029
122	2	12	2, V36,F6	.496	.481	1.000	-.038	-.029
123	2	12	2, V40,F1	.473	.491	1.000	-.051	-.052
124	2	12	2, V37,F1	.473	.492	1.000	-.040	-.030
125	2	12	1, V31,F5	.462	.497	1.000	.043	.027
126	2	12	2, V30,F1	.444	.505	1.000	.051	.029
127	2	12	2, V33,F1	.431	.512	1.000	.052	.035
128	2	12	2, V19,F4	.429	.512	1.000	.038	.040
129	2	12	2, V37,F5	.427	.514	1.000	-.038	-.028
130	2	12	2, V39,F3	.425	.514	1.000	-.033	-.031
131	2	12	1, V29,F3	.423	.515	1.000	-.046	-.032
132	2	12	1, V41,F2	.423	.515	1.000	-.036	-.036
133	2	12	2, V31,F4	.420	.517	1.000	-.052	-.034
134	2	12	2, V21,F6	.394	.530	1.000	-.041	-.042
135	2	12	2, V27,F6	.376	.540	1.000	-.042	-.031
136	2	12	1, V20,F6	.369	.544	1.000	.035	.036
137	2	12	1, V21,F4	.361	.548	1.000	.028	.031
138	2	12	2, V32,F4	.346	.556	1.000	-.050	-.031
139	2	12	1, V39,F6	.338	.561	1.000	.046	.046
140	2	12	2, V32,F6	.322	.571	1.000	.039	.024
141	2	12	2, V28,F1	.320	.572	1.000	-.039	-.027
142	2	12	1, V39,F1	.318	.573	1.000	-.038	-.039
143	2	12	2, V29,F6	.312	.577	1.000	.038	.027
144	2	12	2, V39,F4	.309	.578	1.000	-.028	-.027
145	2	12	2, V21,F4	.307	.579	1.000	-.026	-.027
146	2	12	2, V23,F5	.282	.595	1.000	.038	.038
147	2	12	1, V42,F4	.275	.600	1.000	-.026	-.028
148	2	12	2, V43,F2	.274	.601	1.000	-.030	-.030
149	2	12	2, V35,F1	.273	.601	1.000	-.030	-.023
150	2	12	2, V22,F5	.253	.615	1.000	-.036	-.040
151	2	12	2, V40,F6	.230	.632	1.000	.041	.041
152	2	12	2, V37,F3	.221	.638	1.000	.036	.026
153	2	12	2, V20,F3	.209	.647	1.000	.023	.024
154	2	12	2, V23,F2	.205	.651	1.000	-.022	-.022
155	2	12	1, V41,F4	.204	.651	1.000	.025	.025
156	2	12	1, V33,F6	.204	.652	1.000	.035	.023
157	2	12	1, V40,F1	.202	.653	1.000	.030	.031
158	2	12	1, V35,F2	.192	.661	1.000	.027	.019
159	2	12	1, V22,F2	.186	.666	1.000	.023	.025
160	2	12	1, V37,F2	.181	.671	1.000	.030	.022
161	2	12	2, V20,F6	.175	.676	1.000	.029	.030
162	2	12	1, V21,F6	.173	.678	1.000	-.022	-.024
163	2	12	1, V20,F4	.167	.682	1.000	-.021	-.022
164	2	12	1, V32,F6	.163	.686	1.000	-.025	-.016
165	2	12	1, V31,F1	.159	.690	1.000	-.025	-.015
166	2	12	2, V37,F2	.153	.696	1.000	.026	.019
167	2	12	1, V42,F3	.152	.696	1.000	.019	.020
168	2	12	1, V27,F3	.152	.697	1.000	.031	.021
169	2	12	2, V21,F3	.150	.698	1.000	-.018	-.019
170	2	12	1, V28,F3	.148	.700	1.000	.028	.020
171	2	12	2, V39,F6	.146	.702	1.000	.035	.033
172	2	12	2, V35,F5	.146	.703	1.000	-.022	-.017
173	2	12	2, V42,F1	.144	.704	1.000	-.029	-.029
174	2	12	1, V27,F4	.142	.706	1.000	-.029	-.020
175	2	12	2, V33,F6	.137	.711	1.000	-.029	-.020
176	2	12	2, V41,F2	.137	.711	1.000	.019	.020
177	2	12	1, V31,F6	.132	.717	1.000	.022	.013

178	2	12	2, V32,F5	.121	.728	1.000	-.024	-.014
179	2	12	2, V31,F1	.120	.729	1.000	-.022	-.015
180	2	12	2, V40,F2	.110	.741	1.000	-.016	-.017
181	2	12	2, V40,F3	.100	.752	1.000	-.015	-.016
182	2	12	1, V30,F1	.094	.759	1.000	.022	.013
183	2	12	1, V27,F5	.089	.766	1.000	.022	.015
184	2	12	2, V34,F1	.065	.799	1.000	.018	.012
185	2	12	2, V19,F5	.063	.802	1.000	-.021	-.022
186	2	12	2, V19,F3	.060	.806	1.000	.014	.015
187	2	12	2, V35,F6	.057	.811	1.000	-.014	-.011
188	2	12	2, V20,F5	.056	.814	1.000	.017	.018
189	2	12	1, V23,F3	.051	.821	1.000	.013	.012
190	2	12	1, V43,F4	.048	.827	1.000	.011	.012
191	2	12	1, V21,F3	.044	.834	1.000	-.010	-.011
192	2	12	1, V34,F1	.041	.840	1.000	-.013	-.009
193	2	12	2, V31,F5	.037	.848	1.000	-.012	-.008
194	2	12	1, V21,F5	.036	.849	1.000	-.011	-.012
195	2	12	2, V21,F5	.035	.853	1.000	-.013	-.013
196	2	12	2, V43,F5	.025	.874	1.000	.015	.015
197	2	12	2, V27,F3	.025	.875	1.000	.012	.009
198	2	12	1, V43,F1	.023	.881	1.000	-.009	-.010
199	2	12	1, V39,F4	.021	.884	1.000	-.008	-.008
200	2	12	1, V38,F1	.020	.887	1.000	.009	.010
201	2	12	2, V22,F4	.019	.890	1.000	.007	.008
202	2	12	2, V19,F2	.019	.891	1.000	.008	.009
203	2	12	1, V43,F5	.019	.892	1.000	-.011	-.011
204	2	12	2, V40,F4	.018	.894	1.000	-.007	-.007
205	2	12	2, V19,F6	.018	.894	1.000	.011	.011
206	2	12	1, V29,F1	.016	.899	1.000	.008	.006
207	2	12	2, V21,F2	.013	.909	1.000	-.005	-.006
208	2	12	2, V43,F3	.010	.919	1.000	-.006	-.006
209	2	12	1, V23,F5	.008	.929	1.000	.006	.006
210	2	12	1, V34,F5	.008	.930	1.000	.006	.004
211	2	12	1, V28,F6	.007	.932	1.000	.006	.004
212	2	12	2, V42,F2	.003	.956	1.000	.003	.003
213	2	12	2, V33,F4	.003	.958	1.000	-.005	-.004
214	2	12	2, V28,F4	.002	.967	1.000	-.003	-.002
215	2	12	1, V23,F4	.001	.971	1.000	-.002	-.002
216	2	12	2, V34,F5	.001	.972	1.000	-.003	-.002
217	2	12	2, V34,F6	.001	.976	1.000	-.002	-.001
218	2	12	1, V20,F3	.001	.979	1.000	.001	.001
219	2	12	2, V41,F4	.000	.984	1.000	.001	.001
220	2	12	2, V28,F6	.000	.995	1.000	.000	.000
221	2	0	1, F2,F2	.000	1.000	1.000	.000	.000
222	2	0	1, F3,F3	.000	1.000	1.000	.000	.000
223	2	0	1, F4,F4	.000	1.000	1.000	.000	.000
224	2	0	1, F5,F5	.000	1.000	1.000	.000	.000
225	2	0	1, F6,F6	.000	1.000	1.000	.000	.000
226	2	0	2, F1,F1	.000	1.000	1.000	.000	.000
227	2	0	2, F6,F6	.000	1.000	1.000	.000	.000
228	2	0	2, F5,F5	.000	1.000	1.000	.000	.000
229	2	0	2, F4,F4	.000	1.000	1.000	.000	.000
230	2	0	2, F3,F3	.000	1.000	1.000	.000	.000
231	2	0	2, F2,F2	.000	1.000	1.000	.000	.000
232	2	0	1, F1,F1	.000	1.000	1.000	.000	.000

17-May-07 PAGE : 37 EQS Licensee:
TITLE: IV Measurement Model: sample1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

MULTIVARIATE LAGRANGE MULTIPLIER TEST BY SIMULTANEOUS PROCESS IN STAGE 1

PARAMETER SETS (SUBMATRICES) ACTIVE AT THIS STAGE ARE:

PVV PFV PFF PDD GVV GVF GFV GFF BVF BFF

	CUMULATIVE MULTIVARIATE STATISTICS				UNIVARIATE INCREMENT			
							HANCOCK'S SEQUENTIAL	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROB.	CHI-SQUARE	PROB.	D.F.	PROB.
1	2, V42,F5	13.211	1	.000	13.211	.000	388	1.000
2	1, V36,F3	25.247	2	.000	12.036	.001	387	1.000
3	1, V39,F2	37.102	3	.000	11.855	.001	386	1.000
4	1, V41,F5	46.945	4	.000	9.843	.002	385	1.000
5	2, V28,F5	56.031	5	.000	9.086	.003	384	1.000
6	2, V34,F4	65.083	6	.000	9.052	.003	383	1.000
7	1, V30,F2	72.580	7	.000	7.496	.006	382	1.000
8	1, V31,F2	82.866	8	.000	10.287	.001	381	1.000
9	2, V27,F4	89.539	9	.000	6.673	.010	380	1.000
10	2, V34,F2	95.844	10	.000	6.304	.012	379	1.000
11	2, V38,F2	101.840	11	.000	5.996	.014	378	1.000
12	2, V38,F1	107.788	12	.000	5.949	.015	377	1.000
13	1, V34,F4	113.451	13	.000	5.663	.017	376	1.000
14	1, V19,F4	119.089	14	.000	5.638	.018	375	1.000
15	1, V23,F2	125.017	15	.000	5.928	.015	374	1.000
16	1, V36,F1	130.591	16	.000	5.573	.018	373	1.000
17	1, V28,F4	135.530	17	.000	4.940	.026	372	1.000
18	1, V43,F2	140.232	18	.000	4.701	.030	371	1.000

LAGRANGIAN MULTIPLIER TEST REQUIRED 284525 WORDS OF MEMORY.
PROGRAM ALLOCATES ******** WORDS.

1

Execution begins at 17:11:06
Execution ends at 17:11:15

```
Elapsed time =       9.00 seconds
```

Appendix 3.6 Cross-Validation Analysis of the Six-Construct Job Feature Measurement Model (loading-covariance)

```
1
 EQS, A STRUCTURAL EQUATION PROGRAM          MULTIVARIATE SOFTWARE, INC.
 COPYRIGHT BY P.M. BENTLER                   VERSION 6.1 (C) 1985 - 2006 (B91).


   PROGRAM CONTROL INFORMATION

   /TITLE
   IV Measurement Model: sample2
   /SPECIFICATIONS
   DATA='I:\EQS\DatafileandOutput\leartluk(Sample2).ESS';
   VARIABLES=99; CASES=204; GROUP=2;
   METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
   /LABELS
   V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
   V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
   V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
   V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
   V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
   V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
   V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
   V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
   V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
   V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
   V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
   V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
   V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
   V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
   V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
   V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
   V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
   V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
   V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
   V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
   /EQUATIONS
   V19 =   *F1 + E19;
   V20 =   *F1 + E20;
   V21 =   *F1 + E21;
   V22 =   *F1 + E22;
   V23 =   *F1 + E23;
   V27 =   *F2 + E27;
   V28 =   *F2 + E28;
   V29 =   *F2 + E29;
   V30 =   *F3 + E30;
   V31 =   *F3 + E31;
   V32 =   *F3 + E32;
   V33 =   *F3 + E33;
   V34 =   *F3 + E34;
   V35 =   *F4 + E35;
   V36 =   *F4 + E36;
   V37 =   *F4 + E37;
   V38 =   *F5 + E38;
   V39 =   *F5 + E39;
   V40 =   *F5 + E40;
   V41 =   *F6 + E41;
   V42 =   *F6 + E42;
   V43 =   *F6 + E43;
   /VARIANCES
    F1 = 1;


17-May-07      PAGE :  2  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

    F2 = 1;
    F3 = 1;
    F4 = 1;
    F5 = 1;
    F6 = 1;
    E19 = *;
    E20 = *;
    E21 = *;
    E22 = *;
    E23 = *;
    E27 = *;
    E28 = *;
    E29 = *;
    E30 = *;
    E31 = *;
    E32 = *;
    E33 = *;
    E34 = *;
    E35 = *;
    E36 = *;
    E37 = *;
    E38 = *;
    E39 = *;
    E40 = *;
    E41 = *;
    E42 = *;
    E43 = *;
```

```
/COVARIANCES
F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;
F3,F6 = *;
F4,F6 = *;
F5,F6 = *;
/PRINT
EIS;
FIT=ALL;
TABLE=EQUATION;
/END

   100 CUMULATED RECORDS OF INPUT MODEL FILE WERE READ (GROUP   1)


17-May-07      PAGE :  3  EQS     Licensee:
 TITLE:

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2



   PROGRAM CONTROL INFORMATION

/TITLE
IV Measurement Model: sample1
/SPECIFICATIONS
DATA='I:\EQS\DatafileandOutput\leartluk(Sample1).ESS';
VARIABLES=99; CASES=204;
METHOD=ML,ROBUST; ANALYSIS=COVARIANCE; MATRIX=RAW;
/LABELS
V1=AGE; V2=GENDER; V3=EDUCATIO; V4=TENURE; V5=CLASS;
V6=CLASS1; V7=CLASS2; V8=CLASS3; V9=PA1; V10=NA1;
V11=PA2; V12=NA2; V13=NA3; V14=NA4; V15=PA3;
V16=PA4; V17=PA5; V18=NA5; V19=LOAD1; V20=LOAD2;
V21=LOAD3; V22=LOAD4; V23=LOAD5; V24=THREAT1; V25=THREAT2;
V26=THREAT3; V27=AUT1; V28=AUT2; V29=AUT3; V30=SUP1;
V31=SUP2; V32=SUP3; V33=SUP4; V34=SUP5; V35=PEER1;
V36=PEER2; V37=PEER3; V38=SACT1; V39=SACT2; V40=SACT3;
V41=DACT1; V42=DACT2; V43=DACT3; V44=SAT1; V45=SAT2;
V46=SAT3; V47=SYMPT1; V48=SYMPT2; V49=SYMPT3; V50=SYMPT4;
V51=SYMPT5; V52=SYMPT6; V53=SYMPT7; V54=SYMPT8; V55=ANGER1;
V56=ANGER2; V57=ANGE3; V58=ANGER4; V59=ANGER5; V60=ANGER6;
V61=GHQ1; V62=GHQ2; V63=GHQ3; V64=GHQ4; V65=GHQ5;
V66=GHQ6; V67=GHQ7; V68=GHQ8; V69=GHQ9; V70=GHQ10;
V71=GHQ11; V72=GHQ12; V73=WELLB1; V74=WELLB2; V75=WELLB3;
V76=WELLB4; V77=WELLB5; V78=WELLB6; V79=WELLB7; V80=WELLB8;
V81=WELLB9; V82=WELLB10; V83=PA; V84=NA; V85=SYMPTOM;
V86=AGRO; V87=PGHQ; V88=NGHQ; V89=JOBSAT; V90=THREAT;
V91=SURFACE; V92=DEEP; V93=WELLNESS; V94=DISTRESS; V95=CONTROL;
V96=DEMANDS; V97=SSUPPORT; V98=PSUPPORT; V99=FILTER_$;
/EQUATIONS
V19 =   *F1 + E19;
V20 =   *F1 + E20;
V21 =   *F1 + E21;
V22 =   *F1 + E22;
V23 =   *F1 + E23;
V27 =   *F2 + E27;
V28 =   *F2 + E28;
V29 =   *F2 + E29;
V30 =   *F3 + E30;
V31 =   *F3 + E31;
V32 =   *F3 + E32;
V33 =   *F3 + E33;
V34 =   *F3 + E34;
V35 =   *F4 + E35;
V36 =   *F4 + E36;
V37 =   *F4 + E37;
V38 =   *F5 + E38;
V39 =   *F5 + E39;
V40 =   *F5 + E40;
V41 =   *F6 + E41;
V42 =   *F6 + E42;
V43 =   *F6 + E43;
/VARIANCES
 F1 = 1;
 F2 = 1;
 F3 = 1;
 F4 = 1;
 F5 = 1;
 F6 = 1;
 E19 = *;
 E20 = *;


17-May-07      PAGE :  4  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2
```

```
 E21 = *;
 E22 = *;
 E23 = *;
 E27 = *;
 E28 = *;
 E29 = *;
 E30 = *;
 E31 = *;
 E32 = *;
 E33 = *;
 E34 = *;
 E35 = *;
 E36 = *;
 E37 = *;
 E38 = *;
 E39 = *;
 E40 = *;
 E41 = *;
 E42 = *;
 E43 = *;
/COVARIANCES
F1,F2 = *;
F1,F3 = *;
F2,F3 = *;
F1,F4 = *;
F2,F4 = *;
F3,F4 = *;
F1,F5 = *;
F2,F5 = *;
F3,F5 = *;
F4,F5 = *;
F1,F6 = *;
F2,F6 = *;
F3,F6 = *;
F4,F6 = *;
F5,F6 = *;
/CONSTRAINTS
(1,V19,F1) = (2,V19,F1);
(1,V20,F1) = (2,V20,F1);
(1,V21,F1) = (2,V21,F1);
(1,V22,F1) = (2,V22,F1);
(1,V23,F1) = (2,V23,F1);
(1,V27,F2) = (2,V27,F2);
(1,V28,F2) = (2,V28,F2);
(1,V29,F2) = (2,V29,F2);
(1,V30,F3) = (2,V30,F3);
(1,V31,F3) = (2,V31,F3);
(1,V32,F3) = (2,V32,F3);
(1,V33,F3) = (2,V33,F3);
(1,V34,F3) = (2,V34,F3);
(1,V35,F4) = (2,V35,F4);
(1,V36,F4) = (2,V36,F4);
(1,V37,F4) = (2,V37,F4);
(1,V38,F5) = (2,V38,F5);
(1,V39,F5) = (2,V39,F5);
(1,V40,F5) = (2,V40,F5);
(1,V41,F6) = (2,V41,F6);


17-May-07      PAGE :  5  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

(1,V42,F6) = (2,V42,F6);
(1,V43,F6) = (2,V43,F6);
(1,F1,F2) = (2,F1,F2);
(1,F1,F3) = (2,F1,F3);
(1,F2,F3) = (2,F2,F3);
(1,F1,F4) = (2,F1,F4);
(1,F2,F4) = (2,F2,F4);
(1,F3,F4) = (2,F3,F4);
(1,F1,F5) = (2,F1,F5);
(1,F2,F5) = (2,F2,F5);
(1,F3,F5) = (2,F3,F5);
(1,F4,F5) = (2,F4,F5);
(1,F1,F6) = (2,F1,F6);
(1,F2,F6) = (2,F2,F6);
(1,F3,F6) = (2,F3,F6);
(1,F4,F6) = (2,F4,F6);
(1,F5,F6) = (2,F5,F6);


/PRINT
EIS;
FIT=ALL;
TABLE=EQUATION;
/LMTEST
PROCESS=SIMULTANEOUS;
SET=PVV,PFV,PFF,PDD,GVV,GVF,GFV,GFF,
BVF,BFF;
/WTEST
PVAL=0.05;
PRIORITY=ZERO;
/END


     248 CUMULATED RECORDS OF INPUT MODEL FILE WERE READ (GROUP   2)

*** NOTE THAT THE PRINT     SECTION ABOVE WILL OVERRIDE
    THE PRINT     SECTION IN A PREVIOUS GROUP.
```

```
   DATA IS READ FROM I:\EQS\DatafileandOutput\leartluk(Sample2).ESS
   THERE ARE  99 VARIABLES AND   204 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING ***     4 CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
     2    89   143   166


17-May-07      PAGE :  6  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1


 SAMPLE STATISTICS BASED ON COMPLETE CASES

                          UNIVARIATE STATISTICS
                          ---------------------

  VARIABLE         LOAD1      LOAD2      LOAD3      LOAD4      LOAD5
                     V19        V20        V21        V22        V23

  MEAN               2.7100     2.9850     3.0650     3.2050     2.9300

  SKEWNESS (G1)      -.0147     -.0713     -.1287     -.1835     -.0239

  KURTOSIS (G2)      -.1689     -.0300      .0690     -.0347     -.3467

  STANDARD DEV.      1.0253      .9641      .9192      .9204     1.0914

  VARIABLE           AUT1       AUT2       AUT3       SUP1       SUP2
                     V27        V28        V29        V30        V31

  MEAN               4.6600     4.3750     4.6500     4.2500     4.5750

  SKEWNESS (G1)      -.6471     -.6715     -.7227     -.2471     -.2439

  KURTOSIS (G2)      -.1798     -.0209     -.0312     -.8741     -.7707

  STANDARD DEV.      1.4612     1.4158     1.4345     1.7065     1.6116

  VARIABLE           SUP3       SUP4       SUP5      PEER1      PEER2
                     V32        V33        V34        V35        V36

  MEAN               4.4400     4.2550     4.7200     4.7850     4.7300

  SKEWNESS (G1)      -.2913     -.3416     -.4440     -.6319     -.5727

  KURTOSIS (G2)      -.5488     -.3454     -.3500      .1900      .0998

  STANDARD DEV.      1.6185     1.4971     1.5341     1.4138     1.4656

  VARIABLE         PEER3      SACT1      SACT2      SACT3      DACT1
                     V37        V38        V39        V40        V41

  MEAN               4.6700     3.1600     2.9200     3.0600     2.8150

  SKEWNESS (G1)      -.5296      .0552     -.0616     -.0875     -.1103

  KURTOSIS (G2)       .2377      .3696      .1171      .1361     -.1681

  STANDARD DEV.      1.3967      .8991      .9841      .9753      .9979

  VARIABLE         DACT2      DACT3
                     V42        V43

  MEAN               2.8300     2.9900

  SKEWNESS (G1)      -.0483     -.1875

  KURTOSIS (G2)      -.0317     -.0251

  STANDARD DEV.       .9463      .9563

                          MULTIVARIATE KURTOSIS
                          ---------------------

  MARDIA'S COEFFICIENT (G2,P) =     221.4836
  NORMALIZED ESTIMATE =              48.1942

                   ELLIPTICAL THEORY KURTOSIS ESTIMATES
                   ------------------------------------

  MARDIA-BASED KAPPA =       .4195 MEAN SCALED UNIVARIATE KURTOSIS =     -.0410

  MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA=           .4195


  CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:
  ---------------------------------------------------------------------------

  CASE NUMBER        10           11           63          103          195
```

ESTIMATE	993.5602	1533.8729	1022.0752	892.4286	947.7666

TITLE: IV Measurement Model: sample2

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

COVARIANCE MATRIX TO BE ANALYZED: 22 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 200 CASES.

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	1.051				
LOAD2	V20	.538	.929			
LOAD3	V21	.371	.574	.845		
LOAD4	V22	.251	.455	.554	.847	
LOAD5	V23	.377	.687	.673	.542	1.191
AUT1	V27	-.084	.020	-.053	-.056	-.300
AUT2	V28	-.127	-.125	-.120	-.158	-.335
AUT3	V29	-.238	-.131	-.108	-.089	-.276
SUP1	V30	-.259	-.283	-.278	-.132	-.349
SUP2	V31	-.370	-.263	-.314	-.214	-.331
SUP3	V32	-.309	-.265	-.280	-.136	-.225
SUP4	V33	-.277	-.328	-.228	-.304	-.233
SUP5	V34	-.318	-.271	-.303	-.123	-.281
PEER1	V35	-.424	-.370	-.257	-.207	-.292
PEER2	V36	-.330	-.215	-.208	-.085	-.280
PEER3	V37	-.322	-.271	-.265	-.163	-.325
SACT1	V38	.243	.339	.236	.183	.308
SACT2	V39	.268	.320	.322	.228	.371
SACT3	V40	.249	.358	.353	.179	.391
DACT1	V41	.222	.238	.288	.294	.354
DACT2	V42	.222	.304	.252	.266	.234
DACT3	V43	.223	.236	.237	.193	.215

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	2.135				
AUT2	V28	1.389	2.004			
AUT3	V29	1.539	1.599	2.058		
SUP1	V30	.869	.886	.997	2.912	
SUP2	V31	.880	.813	.871	2.263	2.597
SUP3	V32	.562	.598	.708	2.241	2.067
SUP4	V33	.394	.502	.346	1.644	1.657
SUP5	V34	.583	.598	.545	1.899	1.981
PEER1	V35	.419	.604	.568	1.305	1.290
PEER2	V36	.516	.685	.488	1.229	1.181
PEER3	V37	.405	.622	.462	1.294	1.246
SACT1	V38	.155	.040	.167	-.171	-.138
SACT2	V39	-.133	-.196	-.154	-.472	-.446
SACT3	V40	.031	-.058	.036	-.457	-.316
DACT1	V41	-.093	.050	.101	-.270	-.275
DACT2	V42	.002	.079	.101	-.173	-.093
DACT3	V43	.177	.240	.197	-.043	.001

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	2.619				
SUP4	V33	1.621	2.241			
SUP5	V34	1.953	1.554	2.353		
PEER1	V35	1.366	1.065	1.301	1.999	
PEER2	V36	1.346	1.049	1.336	1.746	2.148
PEER3	V37	1.337	1.044	1.214	1.376	1.559
SACT1	V38	-.222	-.157	-.161	-.161	-.153
SACT2	V39	-.432	-.115	-.344	-.324	-.263
SACT3	V40	-.459	-.171	-.385	-.349	-.305
DACT1	V41	-.094	-.053	-.183	-.140	-.050
DACT2	V42	-.136	-.077	-.048	-.203	-.162
DACT3	V43	-.121	-.048	-.038	-.153	-.123

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	1.951				
SACT1	V38	-.208	.808			
SACT2	V39	-.318	.556	.968		
SACT3	V40	-.372	.548	.678	.951	
DACT1	V41	-.092	.326	.488	.478	.996
DACT2	V42	-.082	.364	.449	.387	.642
DACT3	V43	-.028	.368	.361	.327	.471

		DACT2 V42	DACT3 V43
DACT2	V42	.896	
DACT3	V43	.636	.914

BENTLER-WEEKS STRUCTURAL REPRESENTATION:

```
     NUMBER OF DEPENDENT VARIABLES = 22
         DEPENDENT V'S :    19   20   21   22   23   27   28   29   30   31
         DEPENDENT V'S :    32   33   34   35   36   37   38   39   40   41
         DEPENDENT V'S :    42   43

     NUMBER OF INDEPENDENT VARIABLES = 28
         INDEPENDENT F'S :     1    2    3    4    5    6
```

```
          INDEPENDENT E'S :    19   20   21   22   23   27   28   29   30   31
          INDEPENDENT E'S :    32   33   34   35   36   37   38   39   40   41
          INDEPENDENT E'S :    42   43

      NUMBER OF FREE PARAMETERS =  59
      NUMBER OF FIXED NONZERO PARAMETERS =  28


   DATA IS READ FROM I:\EQS\DatafileandOutput\leartluk(Sample1).ESS
   THERE ARE  99 VARIABLES AND   204 CASES
   IT IS A RAW DATA ESS FILE

*** WARNING ***     3 CASES ARE SKIPPED BECAUSE A VARIABLE IS MISSING--
    32   106   146


17-May-07      PAGE :  8  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2


 SAMPLE STATISTICS BASED ON COMPLETE CASES


                          UNIVARIATE STATISTICS
                          ---------------------


  VARIABLE         LOAD1      LOAD2      LOAD3      LOAD4      LOAD5
                     V19        V20        V21        V22        V23

  MEAN              2.6070     2.9701     2.9652     3.0398     2.8308

  SKEWNESS (G1)      .0688     -.0395     -.0575      .0065      .0879

  KURTOSIS (G2)     -.1563     -.2301     -.1540     -.0492     -.2155

  STANDARD DEV.      .9590      .9691      .9817      .8935      .9804

  VARIABLE           AUT1       AUT2       AUT3       SUP1       SUP2
                     V27        V28        V29        V30        V31

  MEAN              4.5970     4.3433     4.6269     4.4030     4.7214

  SKEWNESS (G1)     -.5810     -.5244     -.6138     -.4316     -.4888

  KURTOSIS (G2)     -.0136     -.3965     -.2062     -.6529     -.2985

  STANDARD DEV.     1.3608     1.4376     1.4160     1.7297     1.5106

  VARIABLE           SUP3       SUP4       SUP5      PEER1      PEER2
                     V32        V33        V34        V35        V36

  MEAN              4.3930     4.2537     4.6716     4.8209     4.7463

  SKEWNESS (G1)     -.2778     -.4169     -.5686     -.5917     -.4601

  KURTOSIS (G2)     -.5372     -.2938     -.0395      .2301      .2677

  STANDARD DEV.     1.6431     1.4596     1.5005     1.2953     1.3305

  VARIABLE         PEER3      SACT1      SACT2      SACT3      DACT1
                     V37        V38        V39        V40        V41

  MEAN              4.6269     3.2040     2.9303     3.1194     2.7662

  SKEWNESS (G1)     -.5237     -.0227     -.0707     -.1781     -.0461

  KURTOSIS (G2)      .2901     -.1026     -.2132     -.0565     -.2286

  STANDARD DEV.     1.3546      .9712     1.0465      .9878      .9900

  VARIABLE         DACT2      DACT3
                     V42        V43

  MEAN              2.8358     2.9602

  SKEWNESS (G1)     -.1443     -.3064

  KURTOSIS (G2)     -.3428     -.2217

  STANDARD DEV.     1.0237     1.0042

                          MULTIVARIATE KURTOSIS
                          ---------------------

  MARDIA'S COEFFICIENT (G2,P) =    184.6065
  NORMALIZED ESTIMATE =             40.2701


                   ELLIPTICAL THEORY KURTOSIS ESTIMATES
                   ------------------------------------

  MARDIA-BASED KAPPA =       .3496 MEAN SCALED UNIVARIATE KURTOSIS =     -.0549

  MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA=           .3496
```

CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:

CASE NUMBER	11	22	66	96	105
ESTIMATE	1152.1118	668.6978	724.3304	578.1063	597.6180

TITLE: IV Measurement Model: sample1

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

COVARIANCE MATRIX TO BE ANALYZED: 22 VARIABLES (SELECTED FROM 99 VARIABLES)
BASED ON 201 CASES.

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.920				
LOAD2	V20	.533	.939			
LOAD3	V21	.456	.599	.964		
LOAD4	V22	.311	.501	.596	.798	
LOAD5	V23	.478	.620	.674	.502	.961
AUT1	V27	-.099	-.157	-.104	-.009	-.154
AUT2	V28	.021	-.130	-.128	-.039	-.112
AUT3	V29	-.092	-.091	-.053	.065	-.063
SUP1	V30	-.001	-.123	-.196	-.066	-.286
SUP2	V31	-.195	-.148	-.195	-.034	-.262
SUP3	V32	-.160	-.188	-.271	-.161	-.243
SUP4	V33	.020	-.062	-.126	-.135	-.082
SUP5	V34	-.145	-.135	-.151	.013	-.231
PEER1	V35	-.051	-.145	-.141	-.118	-.080
PEER2	V36	-.020	-.118	-.129	-.085	-.058
PEER3	V37	-.067	-.201	-.148	-.070	-.108
SACT1	V38	.336	.466	.442	.342	.460
SACT2	V39	.297	.418	.468	.338	.493
SACT3	V40	.297	.389	.429	.345	.395
DACT1	V41	.328	.383	.367	.284	.405
DACT2	V42	.235	.380	.404	.297	.432
DACT3	V43	.294	.374	.399	.317	.388

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	1.852				
AUT2	V28	1.369	2.067			
AUT3	V29	1.369	1.524	2.005		
SUP1	V30	.698	.831	.716	2.992	
SUP2	V31	.802	.801	.761	1.998	2.282
SUP3	V32	.689	.914	.727	2.271	1.890
SUP4	V33	.383	.742	.415	1.507	1.381
SUP5	V34	.872	.923	.832	1.693	1.663
PEER1	V35	.677	.582	.478	.893	.930
PEER2	V36	.637	.558	.480	.998	.859
PEER3	V37	.669	.589	.480	.956	.911
SACT1	V38	.158	-.010	.196	.097	-.018
SACT2	V39	.027	-.186	-.011	-.092	-.155
SACT3	V40	.053	-.161	.080	-.058	-.082
DACT1	V41	-.110	-.134	-.083	-.030	-.150
DACT2	V42	-.166	-.063	-.102	-.109	-.261
DACT3	V43	-.171	-.071	-.165	-.089	-.121

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	2.700				
SUP4	V33	1.610	2.130			
SUP5	V34	1.680	1.429	2.252		
PEER1	V35	.926	.711	1.126	1.678	
PEER2	V36	1.005	.720	.991	1.374	1.770
PEER3	V37	.987	.810	.952	1.268	1.465
SACT1	V38	-.086	-.167	-.058	-.103	-.063
SACT2	V39	-.147	-.082	-.118	-.158	-.153
SACT3	V40	-.112	-.270	-.086	-.129	-.100
DACT1	V41	-.083	-.060	-.047	-.102	-.155
DACT2	V42	-.085	-.183	-.159	-.195	-.212
DACT3	V43	-.129	-.095	-.123	-.027	-.030

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	1.835				
SACT1	V38	-.124	.943			
SACT2	V39	-.156	.709	1.095		
SACT3	V40	-.190	.626	.758	.976	
DACT1	V41	-.078	.483	.604	.553	.980
DACT2	V42	-.112	.384	.464	.410	.716
DACT3	V43	.025	.373	.487	.445	.591

		DACT2 V42	DACT3 V43
DACT2	V42	1.048	
DACT3	V43	.663	1.008

BENTLER-WEEKS STRUCTURAL REPRESENTATION:

```
      NUMBER OF DEPENDENT VARIABLES = 22
          DEPENDENT V'S :    19   20   21   22   23   27   28   29   30   31
          DEPENDENT V'S :    32   33   34   35   36   37   38   39   40   41
          DEPENDENT V'S :    42   43

      NUMBER OF INDEPENDENT VARIABLES = 28
          INDEPENDENT F'S :     1    2    3    4    5    6
          INDEPENDENT E'S :    19   20   21   22   23   27   28   29   30   31
          INDEPENDENT E'S :    32   33   34   35   36   37   38   39   40   41
          INDEPENDENT E'S :    42   43

      NUMBER OF FREE PARAMETERS =  59
      NUMBER OF FIXED NONZERO PARAMETERS =  28

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO THE MODEL PROVIDED.
    CALCULATIONS FOR INDEPENDENCE MODEL NOW BEGIN.

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO INDEPENDENCE MODEL.
    CALCULATIONS FOR USER'S MODEL NOW BEGIN.


 3RD STAGE OF COMPUTATION REQUIRED    875560 WORDS OF MEMORY.
 PROGRAM ALLOCATED 200000000 WORDS

 DETERMINANT OF INPUT MATRIX IN GROUP  1 IS    .26601D-03

 DETERMINANT OF INPUT MATRIX IN GROUP  2 IS    .27744D-03

*** NOTE *** RESIDUAL-BASED STATISTICS CANNOT BE
             CALCULATED BECAUSE OF PIVOTING PROBLEMS.


17-May-07      PAGE : 10  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                    =      .809
 RELIABILITY COEFFICIENT RHO         =      .936

 STANDARDIZED FACTOR LOADINGS FOR THE FACTOR THAT GENERATES
 MAXIMAL RELIABILITY FOR THE UNIT-WEIGHT COMPOSITE
 BASED ON THE MODEL (RHO):
 LOAD1     LOAD2     LOAD3     LOAD4     LOAD5       AUT1
     .160      .240      .256      .209      .231      .476
   AUT2      AUT3      SUP1      SUP2      SUP3      SUP4
    .520      .549      .659      .672      .670      .555
   SUP5    PEER1     PEER2     PEER3     SACT1     SACT2
     .641      .561      .587      .520      .256      .283
 SACT3     DACT1     DACT2     DACT3
     .274      .291      .342      .286


 PARAMETER ESTIMATES APPEAR IN ORDER,
 NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.



 RESIDUAL COVARIANCE MATRIX  (S-SIGMA) :
```

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	-.034				
LOAD2	V20	.109	.003			
LOAD3	V21	-.076	-.043	-.035		
LOAD4	V22	-.109	-.041	.038	-.008	
LOAD5	V23	-.084	.051	.011	.009	.042
AUT1	V27	-.007	.126	.057	.033	-.187
AUT2	V28	-.045	-.011	-.002	-.062	-.213
AUT3	V29	-.152	-.012	.016	.011	-.148
SUP1	V30	-.084	-.041	-.026	.070	-.090
SUP2	V31	-.206	-.036	-.078	-.024	-.088
SUP3	V32	-.139	-.031	-.036	.060	.026
SUP4	V33	-.149	-.150	-.043	-.155	-.042
SUP5	V34	-.168	-.063	-.088	.051	-.058
PEER1	V35	-.300	-.198	-.078	-.062	-.106
PEER2	V36	-.193	-.027	-.012	.073	-.078
PEER3	V37	-.201	-.104	-.090	-.023	-.145
SACT1	V38	.007	.013	-.103	-.090	-.042
SACT2	V39	-.016	-.072	-.087	-.102	-.050
SACT3	V40	-.017	-.009	-.029	-.129	-.002
DACT1	V41	-.005	-.075	-.038	.031	.017
DACT2	V42	-.023	-.034	-.099	-.017	-.129
DACT3	V43	.015	-.051	-.062	-.048	-.093

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	.047				
AUT2	V28	-.003	-.009			
AUT3	V29	.084	.040	.089		
SUP1	V30	.123	.085	.162	.058	
SUP2	V31	.180	.063	.087	.176	.182
SUP3	V32	-.161	-.178	-.103	.084	.044
SUP4	V33	-.156	-.088	-.270	.005	.119
SUP5	V34	-.058	-.089	-.173	-.011	.189
PEER1	V35	-.071	.078	.018	.166	.221

PEER2	V36	-.020	.110	-.113	-.018	.012
PEER3	V37	-.072	.110	-.073	.185	.206
SACT1	V38	.165	.051	.178	.036	.056
SACT2	V39	-.121	-.183	-.140	-.223	-.212
SACT3	V40	.042	-.046	.049	-.225	-.098
DACT1	V41	-.087	.056	.108	-.147	-.159
DACT2	V42	.009	.086	.108	-.041	.032
DACT3	V43	.183	.246	.204	.070	.107

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	.019				
SUP4	V33	.032	.053			
SUP5	V34	.101	.147	.130		
PEER1	V35	.262	.225	.323	.182	
PEER2	V36	.137	.131	.266	.194	.161
PEER3	V37	.262	.227	.262	-.005	.049
SACT1	V38	-.021	-.004	.017	.009	.034
SACT2	V39	-.190	.068	-.130	-.118	-.038
SACT3	V40	-.233	.000	-.185	-.157	-.095
DACT1	V41	.025	.038	-.077	-.020	.082
DACT2	V42	-.007	.021	.066	-.073	-.020
DACT3	V43	-.012	.035	.059	-.043	-.003

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	-.050				
SACT1	V38	-.042	-.066			
SACT2	V39	-.118	-.079	-.072		
SACT3	V40	-.185	-.044	-.036	-.015	
DACT1	V41	.026	-.059	.023	.045	-.079
DACT2	V42	.045	-.051	-.052	-.080	-.046
DACT3	V43	.079	.016	-.064	-.070	-.114

		DACT2 V42	DACT3 V43
DACT2	V42	-.009	
DACT3	V43	.007	-.023

AVERAGE ABSOLUTE RESIDUAL = .0857

AVERAGE OFF-DIAGONAL ABSOLUTE RESIDUAL = .0879

17-May-07 PAGE : 11 EQS Licensee:
TITLE: IV Measurement Model: sample2

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	-.032				
LOAD2	V20	.110	.003			
LOAD3	V21	-.081	-.048	-.042		
LOAD4	V22	-.116	-.047	.044	-.010	
LOAD5	V23	-.075	.049	.011	.009	.036
AUT1	V27	-.005	.089	.043	.025	-.117
AUT2	V28	-.031	-.008	-.001	-.048	-.138
AUT3	V29	-.103	-.009	.012	.008	-.095
SUP1	V30	-.048	-.025	-.017	.045	-.048
SUP2	V31	-.125	-.023	-.053	-.016	-.050
SUP3	V32	-.084	-.020	-.025	.040	.015
SUP4	V33	-.097	-.104	-.031	-.112	-.026
SUP5	V34	-.107	-.043	-.062	.036	-.035
PEER1	V35	-.207	-.145	-.060	-.048	-.069
PEER2	V36	-.129	-.019	-.009	.054	-.049
PEER3	V37	-.140	-.077	-.070	-.018	-.095
SACT1	V38	.007	.015	-.125	-.109	-.043
SACT2	V39	-.016	-.076	-.096	-.112	-.047
SACT3	V40	-.017	-.009	-.032	-.143	-.002
DACT1	V41	-.005	-.078	-.042	.034	.015
DACT2	V42	-.024	-.037	-.114	-.020	-.125
DACT3	V43	.015	-.056	-.071	-.054	-.089

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	.022				
AUT2	V28	-.001	-.004			
AUT3	V29	.040	.020	.043		
SUP1	V30	.049	.035	.066	.020	
SUP2	V31	.076	.027	.037	.064	.070
SUP3	V32	-.068	-.078	-.044	.031	.017
SUP4	V33	-.071	-.041	-.126	.002	.049
SUP5	V34	-.026	-.041	-.079	-.004	.077
PEER1	V35	-.035	.039	.009	.069	.097
PEER2	V36	-.010	.053	-.054	-.007	.005
PEER3	V37	-.035	.056	-.036	.078	.091
SACT1	V38	.126	.040	.138	.023	.039
SACT2	V39	-.084	-.131	-.099	-.133	-.134
SACT3	V40	.029	-.033	.035	-.135	-.062

DACT1	V41	-.060	.040	.075	-.086	-.099
DACT2	V42	.006	.064	.080	-.025	.021
DACT3	V43	.131	.182	.148	.043	.069

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	.007				
SUP4	V33	.013	.024			
SUP5	V34	.041	.064	.055		
PEER1	V35	.114	.106	.149	.091	
PEER2	V36	.058	.060	.118	.094	.075
PEER3	V37	.116	.109	.122	-.002	.024
SACT1	V38	-.014	-.003	.012	.007	.026
SACT2	V39	-.120	.046	-.086	-.085	-.026
SACT3	V40	-.148	.000	-.124	-.114	-.067
DACT1	V41	.016	.025	-.050	-.014	.056
DACT2	V42	-.005	.015	.045	-.054	-.014
DACT3	V43	-.008	.025	.040	-.032	-.002

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	-.026				
SACT1	V38	-.034	-.082			
SACT2	V39	-.086	-.089	-.074		
SACT3	V40	-.136	-.050	-.037	-.016	
DACT1	V41	.018	-.066	.023	.046	-.079
DACT2	V42	.034	-.060	-.056	-.087	-.048
DACT3	V43	.059	.018	-.068	-.075	-.119

		DACT2 V42	DACT3 V43
DACT2	V42	-.010	
DACT3	V43	.008	-.025

AVERAGE ABSOLUTE STANDARDIZED RESIDUAL = .0560
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUAL = .0577

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V35, V19	-.207	11	V40, V37	-.136
2	V43, V28	.182	12	V40, V30	-.135
3	V35, V34	.149	13	V39, V31	-.134
4	V43, V29	.148	14	V39, V30	-.133
5	V40, V32	-.148	15	V39, V28	-.131
6	V35, V20	-.145	16	V43, V27	.131
7	V40, V22	-.143	17	V36, V19	-.129
8	V37, V19	-.140	18	V38, V27	.126
9	V38, V29	.138	19	V33, V29	-.126
10	V28, V23	-.138	20	V38, V21	-.125

TITLE: IV Measurement Model: sample2

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DISTRIBUTION OF STANDARDIZED RESIDUALS

```
   --------------------------------------
   !                                    !
120-                *                   -
   !                *                   !
   !                *                   !
   !                *                   !
   !                *                   !
 90-                *  *                -
   !                *  *                !
   !                *  *                !
   !                *  *                !
   !                *  *                !
 60-                *  *                -
   !                *  *                !
   !                *  *                !
   !                *  *                !
   !                *  *                !
 30-             *  *  *                -
   !             *  *  *                !
   !             *  *  *                !
   !             *  *  *  *             !
   !             *  *  *  *             !
   --------------------------------------
      1  2  3  4  5  6  7  8  9  A  B  C

EACH "*" REPRESENTS    6 RESIDUALS
```

	RANGE			FREQ	PERCENT
1	-0.5	-	--	0	.00%
2	-0.4	-	-0.5	0	.00%
3	-0.3	-	-0.4	0	.00%
4	-0.2	-	-0.3	1	.40%
5	-0.1	-	-0.2	28	11.07%
6	0.0	-	-0.1	119	47.04%
7	0.1	-	0.0	92	36.36%
8	0.2	-	0.1	13	5.14%
9	0.3	-	0.2	0	.00%
A	0.4	-	0.3	0	.00%
B	0.5	-	0.4	0	.00%
C	++	-	0.5	0	.00%
	TOTAL			253	100.00%

TITLE: IV Measurement Model: sample2

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

```
 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


LOAD1   =V19 =    .558*F1    + 1.000 E19
                  .048
                11.673@
              (   .053)
              ( 10.524@

LOAD2   =V20 =    .770*F1    + 1.000 E20
                  .042
                18.341@
              (   .041)
              ( 18.625@

LOAD3   =V21 =    .801*F1    + 1.000 E21
                  .040
                19.977@
              (   .040)
              ( 19.796@

LOAD4   =V22 =    .645*F1    + 1.000 E22
                  .041
                15.689@
              (   .048)
              ( 13.346@

LOAD5   =V23 =    .826*F1    + 1.000 E23
                  .044
                18.673@
              (   .043)
              ( 19.363@

  AUT1  =V27 =   1.139*F2    + 1.000 E27
                  .061
                18.832@
              (   .072)
              ( 15.787@

  AUT2  =V28 =   1.222*F2    + 1.000 E28
                  .060
                20.438@
              (   .064)
              ( 19.212@

  AUT3  =V29 =   1.276*F2    + 1.000 E29
                  .059
                21.768@
              (   .069)
              ( 18.535@

  SUP1  =V30 =   1.492*F3    + 1.000 E30
                  .069
                21.676@
              (   .055)
              ( 27.269@

  SUP2  =V31 =   1.399*F3    + 1.000 E31
                  .062
                22.687@
              (   .055)
              ( 25.255@

  SUP3  =V32 =   1.446*F3    + 1.000 E32
                  .064
                22.418@
              (   .058)
              ( 24.968@

  SUP4  =V33 =   1.099*F3    + 1.000 E33
                  .064
                17.067@
              (   .074)
              ( 14.812@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)

17-May-07      PAGE : 14  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SUP5  =V34 =   1.281*F3    + 1.000 E34
                  .062
                20.631@
              (   .061)
              ( 21.088@

PEER1   =V35 =   1.191*F4    + 1.000 E35
                  .055
                21.711@
```

```
              (   .063)
              ( 19.030@

PEER2   =V36 =   1.303*F4    + 1.000 E36
                  .054
                23.945@
              (   .058)
              ( 22.647@

PEER3   =V37 =   1.159*F4    + 1.000 E37
                  .057
                20.320@
              (   .061)
              ( 18.885@

SACT1   =V38 =    .726*F5    + 1.000 E38
                  .041
                17.538@
              (   .047)
              ( 15.492@

SACT2   =V39 =    .874*F5    + 1.000 E39
                  .043
                20.365@
              (   .043)
              ( 20.339@

SACT3   =V40 =    .816*F5    + 1.000 E40
                  .042
                19.382@
              (   .043)
              ( 19.076@

DACT1   =V41 =    .799*F6    + 1.000 E41
                  .044
                18.233@
              (   .048)
              ( 16.526@

DACT2   =V42 =    .860*F6    + 1.000 E42
                  .042
                20.500@
              (   .045)
              ( 19.286@

DACT3   =V43 =    .731*F6    + 1.000 E43
                  .044
                16.515@
              (   .058)
              ( 12.531@


17-May-07      PAGE : 15  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 V                                F
                ---                              ---
                              I F1  -   F1               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F2  -   F2               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F3  -   F3               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F4  -   F4               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F5  -   F5               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I F6  -   F6               1.000 I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
                              I                                I
```

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17-May-07      PAGE : 16  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 E                                D
                ---                              ---
E19 -LOAD1                .774*I                                 I
                          .082 I                                 I
                         9.492@I                                 I
                      (   .081)I                                 I
                      (  9.531@I                                 I
                               I                                 I
E20 -LOAD2                .334*I                                 I
                          .043 I                                 I
                         7.756@I                                 I
                      (   .051)I                                 I
                      (  6.613@I                                 I
                               I                                 I
E21 -LOAD3                .239*I                                 I
                          .036 I                                 I
                         6.620@I                                 I
                      (   .038)I                                 I
                      (  6.273@I                                 I
                               I                                 I
E22 -LOAD4                .439*I                                 I
                          .050 I                                 I
                         8.817@I                                 I
                      (   .078)I                                 I
                      (  5.664@I                                 I
                               I                                 I
E23 -LOAD5                .466*I                                 I
                          .057 I                                 I
                         8.170@I                                 I
                      (   .067)I                                 I
                      (  6.997@I                                 I
                               I                                 I
E27 -  AUT1               .789*I                                 I
                          .096 I                                 I
                         8.203@I                                 I
                      (   .180)I                                 I
                      (  4.398@I                                 I
                               I                                 I
E28 -  AUT2               .520*I                                 I
                          .079 I                                 I
                         6.567@I                                 I
                      (   .130)I                                 I
                      (  3.996@I                                 I
                               I                                 I
E29 -  AUT3               .340*I                                 I
                          .072 I                                 I
                         4.712@I                                 I
                      (   .133)I                                 I
                      (  2.561@I                                 I
                               I                                 I
E30 -  SUP1               .629*I                                 I
                          .080 I                                 I
                         7.859@I                                 I
                      (   .101)I                                 I
                      (  6.197@I                                 I
                               I                                 I
E31 -  SUP2               .458*I                                 I
                          .062 I                                 I
                         7.416@I                                 I
                      (   .072)I                                 I
                      (  6.322@I                                 I
                               I                                 I
E32 -  SUP3               .509*I                                 I
                          .068 I                                 I
                         7.517@I                                 I
                      (   .133)I                                 I
                      (  3.843@I                                 I
                               I                                 I
E33 -  SUP4               .980*I                                 I
                          .106 I                                 I
                         9.254@I                                 I
                      (   .220)I                                 I
                      (  4.456@I                                 I
                               I                                 I

17-May-07      PAGE : 17  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E34 -  SUP5               .583*I                                 I
                          .070 I                                 I
                         8.304@I                                 I
```

```
                     (   .097)I                              I
                     (  6.045@I                              I
                              I                              I
E35 -PEER1                .398*I                             I
                          .059 I                             I
                         6.714@I                             I
                     (   .097)I                              I
                     (  4.129@I                              I
                              I                              I
E36 -PEER2                .290*I                             I
                          .059 I                             I
                         4.959@I                             I
                     (   .086)I                              I
                     (  3.393@I                              I
                              I                              I
E37 -PEER3                .658*I                             I
                          .080 I                             I
                         8.248@I                             I
                     (   .149)I                              I
                     (  4.428@I                              I
                              I                              I
E38 -SACT1                .348*I                             I
                          .044 I                             I
                         7.986@I                             I
                     (   .067)I                              I
                     (  5.164@I                              I
                              I                              I
E39 -SACT2                .276*I                             I
                          .044 I                             I
                         6.280@I                             I
                     (   .053)I                              I
                     (  5.191@I                              I
                              I                              I
E40 -SACT3                .300*I                             I
                          .043 I                             I
                         6.991@I                             I
                     (   .048)I                              I
                     (  6.262@I                              I
                              I                              I
E41 -DACT1                .436*I                             I
                          .055 I                             I
                         8.004@I                             I
                     (   .093)I                              I
                     (  4.713@I                              I
                              I                              I
E42 -DACT2                .164*I                             I
                          .038 I                             I
                         4.328@I                             I
                     (   .054)I                              I
                     (  3.051@I                              I
                              I                              I
E43 -DACT3                .402*I                             I
                          .049 I                             I
                         8.191@I                             I
                     (   .098)I                              I
                     (  4.109@I                              I
                              I                              I
```

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17-May-07      PAGE : 18  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                               F
               ---                             ---
                              I F2  -   F2               -.121*I
                              I F1  -   F1                .056 I
                              I                         -2.176@I
                              I                       (   .063)I
                              I                       ( -1.907)I
                              I                                I
                              I F3  -   F3               -.210*I
                              I F1  -   F1                .053 I
                              I                         -3.977@I
                              I                       (   .060)I
                              I                       ( -3.493@I
                              I                                I
                              I F4  -   F4               -.188*I
                              I F1  -   F1                .054 I
                              I                         -3.507@I
                              I                       (   .061)I
                              I                       ( -3.104@I
                              I                                I
                              I F5  -   F5                .583*I
                              I F1  -   F1                .040 I
                              I                         14.422@I
                              I                       (   .049)I
                              I                       ( 12.022@I
                              I                                I
                              I F6  -   F6                .510*I
                              I F1  -   F1                .044 I
                              I                         11.471@I
                              I                       (   .051)I
                              I                       ( 10.017@I
                              I                                I
```

```
                              I F3  -   F3               .439*I
                              I F2  -   F2               .045 I
                              I                         9.744@I
                              I                       (  .054)I
                              I                       ( 8.074@I
                              I                              I
                              I F4  -   F4               .361*I
                              I F2  -   F2               .048 I
                              I                         7.453@I
                              I                       (  .058)I
                              I                       ( 6.241@I
                              I                              I
                              I F5  -   F5              -.012*I
                              I F2  -   F2               .057 I
                              I                         -.216 I
                              I                       (  .066)I
                              I                       ( -.185)I
                              I                              I
                              I F6  -   F6              -.007*I
                              I F2  -   F2               .057 I
                              I                         -.117 I
                              I                       (  .063)I
                              I                       ( -.105)I
                              I                              I
                              I F4  -   F4               .641*I
                              I F3  -   F3               .033 I
                              I                        19.227@I
                              I                       (  .046)I
                              I                       ( 14.086@I
                              I                              I
                              I F5  -   F5              -.191*I
                              I F3  -   F3               .054 I
                              I                        -3.557@I
                              I                       (  .062)I
                              I                       ( -3.076@I
                              I                              I
                              I F6  -   F6              -.103*I
                              I F3  -   F3               .055 I
                              I                        -1.876 I
                              I                       (  .062)I
                              I                       ( -1.674)I
                              I                              I
```

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17-May-07      PAGE : 19  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

                              I F5  -   F5              -.197*I
                              I F4  -   F4               .054 I
                              I                        -3.661@I
                              I                       (  .064)I
                              I                       ( -3.077@I
                              I                              I
                              I F6  -   F6              -.127*I
                              I F4  -   F4               .055 I
                              I                        -2.296@I
                              I                       (  .064)I
                              I                       ( -1.977@I
                              I                              I
                              I F6  -   F6               .665*I
                              I F5  -   F5               .036 I
                              I                        18.343@I
                              I                       (  .057)I
                              I                       ( 11.757@I
                              I                              I
```

```
17-May-07      PAGE : 20  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 STANDARDIZED SOLUTION:                                          R-SQUARED


LOAD1   =V19 =   .535*F1    + .845 E19                               .287
LOAD2   =V20 =   .800*F1    + .600 E20                               .639
LOAD3   =V21 =   .854*F1    + .521 E21                               .729
LOAD4   =V22 =   .697*F1    + .717 E22                               .486
LOAD5   =V23 =   .771*F1    + .637 E23                               .595
  AUT1  =V27 =   .789*F2    + .615 E27                               .622
  AUT2  =V28 =   .861*F2    + .508 E28                               .742
  AUT3  =V29 =   .910*F2    + .416 E29                               .827
  SUP1  =V30 =   .883*F3    + .469 E30                               .780
  SUP2  =V31 =   .900*F3    + .435 E31                               .810
  SUP3  =V32 =   .897*F3    + .443 E32                               .804
  SUP4  =V33 =   .743*F3    + .669 E33                               .552
  SUP5  =V34 =   .859*F3    + .512 E34                               .738
PEER1   =V35 =   .884*F4    + .468 E35                               .781
PEER2   =V36 =   .924*F4    + .382 E36                               .854
PEER3   =V37 =   .819*F4    + .573 E37                               .671
```

```
SACT1   =V38 =   .776*F5    + .631 E38                                          .602
SACT2   =V39 =   .857*F5    + .515 E39                                          .735
SACT3   =V40 =   .830*F5    + .557 E40                                          .690
DACT1   =V41 =   .771*F6    + .637 E41                                          .594
DACT2   =V42 =   .905*F6    + .426 E42                                          .819
DACT3   =V43 =   .756*F6    + .655 E43                                          .571
```

```
17-May-07      PAGE : 21  EQS     Licensee:
 TITLE:   IV Measurement Model: sample2

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  1

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

               V                                F
              ---                              ---
                            I F2  -   F2              -.121*I
                            I F1  -   F1                    I
                            I                               I
                            I F3  -   F3              -.210*I
                            I F1  -   F1                    I
                            I                               I
                            I F4  -   F4              -.188*I
                            I F1  -   F1                    I
                            I                               I
                            I F5  -   F5               .583*I
                            I F1  -   F1                    I
                            I                               I
                            I F6  -   F6               .510*I
                            I F1  -   F1                    I
                            I                               I
                            I F3  -   F3               .439*I
                            I F2  -   F2                    I
                            I                               I
                            I F4  -   F4               .361*I
                            I F2  -   F2                    I
                            I                               I
                            I F5  -   F5              -.012*I
                            I F2  -   F2                    I
                            I                               I
                            I F6  -   F6              -.007*I
                            I F2  -   F2                    I
                            I                               I
                            I F4  -   F4               .641*I
                            I F3  -   F3                    I
                            I                               I
                            I F5  -   F5              -.191*I
                            I F3  -   F3                    I
                            I                               I
                            I F6  -   F6              -.103*I
                            I F3  -   F3                    I
                            I                               I
                            I F5  -   F5              -.197*I
                            I F4  -   F4                    I
                            I                               I
                            I F6  -   F6              -.127*I
                            I F4  -   F4                    I
                            I                               I


                            I F6  -   F6               .665*I
                            I F5  -   F5                    I
                            I                               I
```

```
-------------------------------------------------------------------------------
                          E N D    O F    M E T H O D
-------------------------------------------------------------------------------
```

```
17-May-07      PAGE : 22  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 RELIABILITY COEFFICIENTS
 ------------------------
 CRONBACH'S ALPHA                   =      .837
 RELIABILITY COEFFICIENT RHO        =      .936

 STANDARDIZED FACTOR LOADINGS FOR THE FACTOR THAT GENERATES
 MAXIMAL RELIABILITY FOR THE UNIT-WEIGHT COMPOSITE
 BASED ON THE MODEL (RHO):
 LOAD1     LOAD2     LOAD3     LOAD4     LOAD5      AUT1
     .177      .238      .250      .218      .250      .499
   AUT2      AUT3      SUP1      SUP2      SUP3      SUP4
     .514      .530      .639      .664      .657      .555
   SUP5    PEER1     PEER2     PEER3     SACT1     SACT2
     .618      .554      .597      .545      .255      .285
 SACT3     DACT1     DACT2     DACT3
```

.275	.315	.316	.278

PARAMETER ESTIMATES APPEAR IN ORDER,
NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.

ALL EQUALITY CONSTRAINTS WERE CORRECTLY IMPOSED

RESIDUAL COVARIANCE MATRIX (S-SIGMA) :

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.027				
LOAD2	V20	.104	-.004			
LOAD3	V21	.010	-.018	.039		
LOAD4	V22	-.049	.005	.080	.009	
LOAD5	V23	.017	-.016	.012	-.031	-.022
AUT1	V27	-.022	-.051	.006	.080	-.040
AUT2	V28	.103	-.016	-.010	.057	.010
AUT3	V29	-.006	.027	.070	.164	.064
SUP1	V30	.174	.119	.055	.136	-.027
SUP2	V31	-.031	.078	.041	.156	-.019
SUP3	V32	.010	.046	-.028	.035	.008
SUP4	V33	.149	.116	.059	.014	.109
SUP5	V34	.005	.072	.064	.187	-.008
PEER1	V35	.074	.027	.038	.027	.105
PEER2	V36	.116	.071	.067	.073	.144
PEER3	V37	.054	-.033	.027	.071	.072
SACT1	V38	.100	.140	.103	.069	.110
SACT2	V39	.013	.025	.059	.009	.072
SACT3	V40	.032	.022	.048	.038	.002
DACT1	V41	.100	.069	.040	.021	.068
DACT2	V42	-.010	.042	.053	.013	.069
DACT3	V43	.086	.087	.100	.076	.080

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	-.044				
AUT2	V28	-.023	.012			
AUT3	V29	-.085	-.036	-.109		
SUP1	V30	-.048	.031	-.120	-.042	
SUP2	V31	.102	.050	-.024	-.089	-.192
SUP3	V32	-.034	.139	-.083	.114	-.133
SUP4	V33	-.167	.153	-.201	-.132	-.157
SUP5	V34	.231	.236	.114	-.217	-.128
PEER1	V35	.187	.056	-.071	-.247	-.139
PEER2	V36	.101	-.018	-.121	-.249	-.310
PEER3	V37	.192	.077	-.054	-.153	-.130
SACT1	V38	.168	.000	.208	.304	.176
SACT2	V39	.039	-.173	.003	.157	.079
SACT3	V40	.065	-.149	.093	.174	.137
DACT1	V41	-.104	-.128	-.076	.093	-.035
DACT2	V42	-.160	-.056	-.094	.024	-.137
DACT3	V43	-.166	-.065	-.159	.024	-.015

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	-.002				
SUP4	V33	.020	-.052			
SUP5	V34	-.172	.021	-.143		
PEER1	V35	-.179	-.129	.148	-.189	
PEER2	V36	-.203	-.199	-.079	-.177	-.153
PEER3	V37	-.088	-.007	.000	-.113	-.045
SACT1	V38	.115	-.015	.120	.067	.124
SACT2	V39	.094	.101	.096	.048	.072
SACT3	V40	.113	-.099	.114	.063	.110
DACT1	V41	.037	.030	.059	.018	-.023
DACT2	V42	.043	-.085	-.045	-.065	-.070
DACT3	V43	-.020	-.012	-.026	.083	.090

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	.010				
SACT1	V38	.042	.066			
SACT2	V39	.044	.075	.070		
SACT3	V40	-.003	.033	.044	.016	
DACT1	V41	.040	.097	.139	.119	.060
DACT2	V42	.015	-.032	-.037	-.057	.029
DACT3	V43	.132	.020	.062	.048	.006

		DACT2 V42	DACT3 V43
DACT2	V42	-.013	
DACT3	V43	.034	.022

AVERAGE ABSOLUTE RESIDUAL = .0784
AVERAGE OFF-DIAGONAL ABSOLUTE RESIDUAL = .0802

17-May-07 PAGE : 23 EQS Licensee:
TITLE: IV Measurement Model: sample1

MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP 2

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED RESIDUAL MATRIX:

		LOAD1 V19	LOAD2 V20	LOAD3 V21	LOAD4 V22	LOAD5 V23
LOAD1	V19	.029				
LOAD2	V20	.112	-.004			
LOAD3	V21	.010	-.019	.040		
LOAD4	V22	-.057	.005	.091	.011	
LOAD5	V23	.018	-.017	.013	-.036	-.022
AUT1	V27	-.017	-.039	.005	.066	-.030
AUT2	V28	.075	-.012	-.007	.044	.007
AUT3	V29	-.005	.020	.051	.130	.046
SUP1	V30	.105	.071	.033	.088	-.016
SUP2	V31	-.021	.053	.028	.116	-.013
SUP3	V32	.006	.029	-.017	.024	.005
SUP4	V33	.107	.082	.041	.011	.076
SUP5	V34	.004	.050	.044	.139	-.006
PEER1	V35	.060	.022	.030	.023	.082
PEER2	V36	.091	.055	.052	.062	.111
PEER3	V37	.042	-.025	.020	.058	.054
SACT1	V38	.107	.149	.108	.079	.115
SACT2	V39	.013	.025	.057	.009	.070
SACT3	V40	.033	.023	.049	.043	.002
DACT1	V41	.106	.072	.041	.024	.070
DACT2	V42	-.010	.042	.052	.015	.069
DACT3	V43	.089	.089	.101	.084	.081

		AUT1 V27	AUT2 V28	AUT3 V29	SUP1 V30	SUP2 V31
AUT1	V27	-.024				
AUT2	V28	-.012	.006			
AUT3	V29	-.044	-.018	-.054		
SUP1	V30	-.020	.012	-.049	-.014	
SUP2	V31	.050	.023	-.011	-.034	-.084
SUP3	V32	-.015	.059	-.036	.040	-.054
SUP4	V33	-.084	.073	-.097	-.052	-.071
SUP5	V34	.113	.109	.054	-.084	-.057
PEER1	V35	.106	.030	-.039	-.110	-.071
PEER2	V36	.056	-.009	-.064	-.108	-.154
PEER3	V37	.104	.040	-.028	-.065	-.063
SACT1	V38	.127	.000	.151	.181	.120
SACT2	V39	.027	-.115	.002	.087	.050
SACT3	V40	.048	-.105	.066	.102	.092
DACT1	V41	-.077	-.090	-.054	.054	-.023
DACT2	V42	-.115	-.038	-.065	.014	-.088
DACT3	V43	-.121	-.045	-.112	.014	-.010

		SUP3 V32	SUP4 V33	SUP5 V34	PEER1 V35	PEER2 V36
SUP3	V32	-.001				
SUP4	V33	.009	-.025			
SUP5	V34	-.070	.010	-.064		
PEER1	V35	-.084	-.068	.076	-.113	
PEER2	V36	-.093	-.102	-.039	-.103	-.086
PEER3	V37	-.039	-.004	.000	-.064	-.025
SACT1	V38	.072	-.010	.082	.053	.096
SACT2	V39	.055	.066	.061	.035	.052
SACT3	V40	.070	-.069	.077	.050	.084
DACT1	V41	.023	.021	.039	.014	-.017
DACT2	V42	.026	-.057	-.029	-.049	-.051
DACT3	V43	-.012	-.008	-.017	.064	.068

		PEER3 V37	SACT1 V38	SACT2 V39	SACT3 V40	DACT1 V41
PEER3	V37	.005				
SACT1	V38	.032	.070			
SACT2	V39	.031	.074	.064		
SACT3	V40	-.003	.035	.043	.016	
DACT1	V41	.029	.101	.134	.122	.061
DACT2	V42	.011	-.032	-.034	-.057	.029
DACT3	V43	.097	.021	.059	.048	.006

		DACT2 V42	DACT3 V43
DACT2	V42	-.012	
DACT3	V43	.033	.022

AVERAGE ABSOLUTE STANDARDIZED RESIDUAL = .0526
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUAL = .0541

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V38, V30	.181	11	V38, V31	.120
2	V36, V31	-.154	12	V31, V22	.116
3	V38, V29	.151	13	V38, V23	.115
4	V38, V20	.149	14	V39, V28	-.115
5	V34, V22	.139	15	V42, V27	-.115
6	V41, V39	.134	16	V34, V27	.113
7	V29, V22	.130	17	V35, V35	-.113
8	V38, V27	.127	18	V20, V19	.112
9	V41, V40	.122	19	V43, V29	-.112

```
    10     V43, V27       -.121      20     V36, V23        .111
```

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17-May-07      PAGE : 24  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 DISTRIBUTION OF STANDARDIZED RESIDUALS


    ----------------------------------------
    !                                      !
 140-                                      -
    !                  *                   !
    !                  *                   !
    !                  *                   !
    !                  *                   !           RANGE      FREQ PERCENT
 105-                  *                   -
    !                  *                   !    1   -0.5  -  --       0    .00%
    !                  *                   !    2   -0.4  -  -0.5     0    .00%
    !               *  *                   !    3   -0.3  -  -0.4     0    .00%
    !               *  *                   !    4   -0.2  -  -0.3     0    .00%
  70-               *  *                   -    5   -0.1  -  -0.2    11   4.35%
    !               *  *                   !    6    0.0  -  -0.1    84  33.20%
    !               *  *                   !    7    0.1  -   0.0   133  52.57%
    !               *  *                   !    8    0.2  -   0.1    25   9.88%
    !               *  *                   !    9    0.3  -   0.2     0    .00%
  35-               *  *                   -    A    0.4  -   0.3     0    .00%
    !               *  *  *                !    B    0.5  -   0.4     0    .00%
    !               *  *  *                !    C     ++  -   0.5     0    .00%
    !            *  *  *  *                !    -------------------------------
    !            *  *  *  *                !           TOTAL       253 100.00%
    ----------------------------------------
       1  2  3  4  5  6  7  8  9  A  B  C    EACH "*" REPRESENTS    7 RESIDUALS
```

```
17-May-07      PAGE : 25  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


LOAD1   =V19 =    .558*F1    + 1.000 E19
                  .048
                11.673@
              (   .053)
              ( 10.524@

LOAD2   =V20 =    .770*F1    + 1.000 E20
                  .042
                18.341@
              (   .041)
              ( 18.625@

LOAD3   =V21 =    .801*F1    + 1.000 E21
                  .040
                19.977@
              (   .040)
              ( 19.796@

LOAD4   =V22 =    .645*F1    + 1.000 E22
                  .041
                15.689@
              (   .048)
              ( 13.346@

LOAD5   =V23 =    .826*F1    + 1.000 E23
                  .044
                18.673@
              (   .043)
              ( 19.363@

  AUT1  =V27 =   1.139*F2    + 1.000 E27
                  .061
                18.832@
              (   .072)
              ( 15.787@

  AUT2  =V28 =   1.222*F2    + 1.000 E28
                  .060
                20.438@
              (   .064)
              ( 19.212@

  AUT3  =V29 =   1.276*F2    + 1.000 E29
                  .059
                21.768@
              (   .069)
```

```
             ( 18.535@

  SUP1  =V30 =   1.492*F3    + 1.000 E30
                  .069
                21.676@
              (   .055)
              ( 27.269@

  SUP2  =V31 =   1.399*F3    + 1.000 E31
                  .062
                22.687@
              (   .055)
              ( 25.255@

  SUP3  =V32 =   1.446*F3    + 1.000 E32
                  .064
                22.418@
              (   .058)
              ( 24.968@

  SUP4  =V33 =   1.099*F3    + 1.000 E33
                  .064
                17.067@
              (   .074)
              ( 14.812@


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)
```



```
 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

  SUP5  =V34 =   1.281*F3    + 1.000 E34
                  .062
                20.631@
              (   .061)
              ( 21.088@

PEER1   =V35 =   1.191*F4    + 1.000 E35
                  .055
                21.711@
              (   .063)
              ( 19.030@

PEER2   =V36 =   1.303*F4    + 1.000 E36
                  .054
                23.945@
              (   .058)
              ( 22.647@

PEER3   =V37 =   1.159*F4    + 1.000 E37
                  .057
                20.320@
              (   .061)
              ( 18.885@

SACT1   =V38 =    .726*F5    + 1.000 E38
                  .041
                17.538@
              (   .047)
              ( 15.492@

SACT2   =V39 =    .874*F5    + 1.000 E39
                  .043
                20.365@
              (   .043)
              ( 20.339@

SACT3   =V40 =    .816*F5    + 1.000 E40
                  .042
                19.382@
              (   .043)
              ( 19.076@

DACT1   =V41 =    .799*F6    + 1.000 E41
                  .044
                18.233@
              (   .048)
              ( 16.526@

DACT2   =V42 =    .860*F6    + 1.000 E42
                  .042
                20.500@
              (   .045)
              ( 19.286@

DACT3   =V43 =    .731*F6    + 1.000 E43
                  .044
                16.515@
              (   .058)
              ( 12.531@
```

```
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                 F
               ---                               ---
                              I F1  -   F1              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F2  -   F2              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F3  -   F3              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F4  -   F4              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F5  -   F5              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F6  -   F6              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
```

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17-May-07      PAGE : 28  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                E                                 D
               ---                               ---
E19 -LOAD1               .582*I                               I
                         .062 I                               I
                        9.389@I                               I
                    (   .064)I                                I
                    (  9.086@I                                I
                              I                               I
E20 -LOAD2               .350*I                               I
                         .044 I                               I
                        8.042@I                               I
                    (   .059)I                                I
                    (  5.916@I                                I
                              I                               I
E21 -LOAD3               .283*I                               I
                         .038 I                               I
                        7.369@I                               I
                    (   .038)I                                I
                    (  7.440@I                                I
                              I                               I
E22 -LOAD4               .374*I                               I
                         .043 I                               I
                        8.717@I                               I
                    (   .066)I                                I
                    (  5.690@I                                I
                              I                               I
E23 -LOAD5               .300*I                               I
                         .041 I                               I
                        7.326@I                               I
                    (   .042)I                                I
                    (  7.151@I                                I
                              I                               I
E27 -  AUT1              .597*I                               I
                         .081 I                               I
                        7.365@I                               I
                    (   .114)I                                I
                    (  5.249@I                                I
                              I                               I
E28 -  AUT2              .561*I                               I
                         .083 I                               I
                        6.738@I                               I
```

```
                      (   .155)I                                I
                      (  3.619@I                                I
                               I                                I
 E29 -  AUT3               .485*I                                I
                           .082 I                                I
                          5.924@I                                I
                      (   .148)I                                I
                      (  3.269@I                                I
                               I                                I
 E30 -  SUP1               .809*I                                I
                           .100 I                                I
                          8.081@I                                I
                      (   .139)I                                I
                      (  5.839@I                                I
                               I                                I
 E31 -  SUP2               .516*I                                I
                           .070 I                                I
                          7.342@I                                I
                      (   .090)I                                I
                      (  5.733@I                                I
                               I                                I
 E32 -  SUP3               .611*I                                I
                           .080 I                                I
                          7.601@I                                I
                      (   .115)I                                I
                      (  5.329@I                                I
                               I                                I
 E33 -  SUP4               .975*I                                I
                           .107 I                                I
                          9.144@I                                I
                      (   .197)I                                I
                      (  4.937@I                                I
                               I                                I
```



```
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

 E34 -  SUP5               .755*I                                I
                           .089 I                                I
                          8.493@I                                I
                      (   .137)I                                I
                      (  5.528@I                                I
                               I                                I
 E35 -PEER1                .448*I                                I
                           .060 I                                I
                          7.475@I                                I
                      (   .096)I                                I
                      (  4.659@I                                I
                               I                                I
 E36 -PEER2                .226*I                                I
                           .051 I                                I
                          4.460@I                                I
                      (   .056)I                                I
                      (  4.066@I                                I
                               I                                I
 E37 -PEER3                .482*I                                I
                           .062 I                                I
                          7.810@I                                I
                      (   .075)I                                I
                      (  6.461@I                                I
                               I                                I
 E38 -SACT1                .351*I                                I
                           .044 I                                I
                          8.062@I                                I
                      (   .057)I                                I
                      (  6.126@I                                I
                               I                                I
 E39 -SACT2                .260*I                                I
                           .042 I                                I
                          6.143@I                                I
                      (   .060)I                                I
                      (  4.343@I                                I
                               I                                I
 E40 -SACT3                .294*I                                I
                           .042 I                                I
                          6.987@I                                I
                      (   .049)I                                I
                      (  6.003@I                                I
                               I                                I
 E41 -DACT1                .281*I                                I
                           .044 I                                I
                          6.468@I                                I
                      (   .049)I                                I
                      (  5.744@I                                I
                               I                                I
 E42 -DACT2                .320*I                                I
                           .050 I                                I
                          6.449@I                                I
                      (   .096)I                                I
                      (  3.339@I                                I
                               I                                I
 E43 -DACT3                .451*I                                I
                           .055 I                                I
                          8.229@I                                I
```

```
                    (   .113)I                                 I
                    (  3.975@I                                 I
                             I                                 I


17-May-07      PAGE : 30  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                 V                              F
                ---                            ---
                             I F2  -   F2              -.121*I
                             I F1  -   F1               .056 I
                             I                        -2.176@I
                             I                      (   .063)I
                             I                      ( -1.907)I
                             I                                 I
                             I F3  -   F3              -.210*I
                             I F1  -   F1               .053 I
                             I                        -3.977@I
                             I                      (   .060)I
                             I                      ( -3.493@I
                             I                                 I
                             I F4  -   F4              -.188*I
                             I F1  -   F1               .054 I
                             I                        -3.507@I
                             I                      (   .061)I
                             I                      ( -3.104@I
                             I                                 I
                             I F5  -   F5               .583*I
                             I F1  -   F1               .040 I
                             I                        14.422@I
                             I                      (   .049)I
                             I                      ( 12.022@I
                             I                                 I
                             I F6  -   F6               .510*I
                             I F1  -   F1               .044 I
                             I                        11.471@I
                             I                      (   .051)I
                             I                      ( 10.017@I
                             I                                 I
                             I F3  -   F3               .439*I
                             I F2  -   F2               .045 I
                             I                         9.744@I
                             I                      (   .054)I
                             I                      (  8.074@I
                             I                                 I
                             I F4  -   F4               .361*I
                             I F2  -   F2               .048 I
                             I                         7.453@I
                             I                      (   .058)I
                             I                      (  6.241@I
                             I                                 I
                             I F5  -   F5              -.012*I
                             I F2  -   F2               .057 I
                             I                         -.216 I
                             I                      (   .066)I
                             I                      (  -.185)I
                             I                                 I
                             I F6  -   F6              -.007*I
                             I F2  -   F2               .057 I
                             I                         -.117 I
                             I                      (   .063)I
                             I                      (  -.105)I
                             I                                 I
                             I F4  -   F4               .641*I
                             I F3  -   F3               .033 I
                             I                        19.227@I
                             I                      (   .046)I
                             I                      ( 14.086@I
                             I                                 I
                             I F5  -   F5              -.191*I
                             I F3  -   F3               .054 I
                             I                        -3.557@I
                             I                      (   .062)I
                             I                      ( -3.076@I
                             I                                 I
                             I F6  -   F6              -.103*I
                             I F3  -   F3               .055 I
                             I                        -1.876 I
                             I                      (   .062)I
                             I                      ( -1.674)I
                             I                                 I


17-May-07      PAGE : 31  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 COVARIANCES AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------
```

```
                         I F5  -   F5               -.197*I
                         I F4  -   F4                .054 I
                         I                        -3.661@I
                         I                      (   .064)I
                         I                      ( -3.077@I
                         I                               I
                         I F6  -   F6               -.127*I
                         I F4  -   F4                .055 I
                         I                        -2.296@I
                         I                      (   .064)I
                         I                      ( -1.977@I
                         I                               I
                         I F6  -   F6                .665*I
                         I F5  -   F5                .036 I
                         I                        18.343@I
                         I                      (   .057)I
                         I                      ( 11.757@I
                         I                               I
```

```
17-May-07      PAGE : 32  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 STANDARDIZED SOLUTION:                                                R-SQUARED



LOAD1   =V19 =   .590*F1    + .807 E19                                     .348
LOAD2   =V20 =   .793*F1    + .609 E20                                     .629
LOAD3   =V21 =   .833*F1    + .553 E21                                     .694
LOAD4   =V22 =   .726*F1    + .688 E22                                     .527
LOAD5   =V23 =   .834*F1    + .552 E23                                     .695
  AUT1  =V27 =   .828*F2    + .561 E27                                     .685
  AUT2  =V28 =   .853*F2    + .522 E28                                     .727
  AUT3  =V29 =   .878*F2    + .479 E29                                     .771
  SUP1  =V30 =   .856*F3    + .516 E30                                     .733
  SUP2  =V31 =   .890*F3    + .457 E31                                     .791
  SUP3  =V32 =   .880*F3    + .475 E32                                     .774
  SUP4  =V33 =   .744*F3    + .668 E33                                     .553
  SUP5  =V34 =   .827*F3    + .561 E34                                     .685
PEER1   =V35 =   .872*F4    + .490 E35                                     .760
PEER2   =V36 =   .939*F4    + .343 E36                                     .883
PEER3   =V37 =   .858*F4    + .514 E37                                     .736
SACT1   =V38 =   .775*F5    + .632 E38                                     .600
SACT2   =V39 =   .864*F5    + .504 E39                                     .746
SACT3   =V40 =   .833*F5    + .553 E40                                     .694
DACT1   =V41 =   .833*F6    + .553 E41                                     .694
DACT2   =V42 =   .835*F6    + .550 E42                                     .698
DACT3   =V43 =   .737*F6    + .676 E43                                     .543
```

```
17-May-07      PAGE : 33  EQS     Licensee:
 TITLE:   IV Measurement Model: sample1

 MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES
 ---------------------------------------

                V                                F
               ---                              ---
                         I F2  -   F2               -.121*I
                         I F1  -   F1                    I
                         I                               I
                         I F3  -   F3               -.210*I
                         I F1  -   F1                    I
                         I                               I
                         I F4  -   F4               -.188*I
                         I F1  -   F1                    I
                         I                               I
                         I F5  -   F5                .583*I
                         I F1  -   F1                    I
                         I                               I
                         I F6  -   F6                .510*I
                         I F1  -   F1                    I
                         I                               I
                         I F3  -   F3                .439*I
                         I F2  -   F2                    I
                         I                               I
                         I F4  -   F4                .361*I
                         I F2  -   F2                    I
                         I                               I
                         I F5  -   F5               -.012*I
                         I F2  -   F2                    I
                         I                               I
                         I F6  -   F6               -.007*I
                         I F2  -   F2                    I
                         I                               I
                         I F4  -   F4                .641*I
                         I F3  -   F3                    I
                         I                               I
                         I F5  -   F5               -.191*I
                         I F3  -   F3                    I
                         I                               I
                         I F6  -   F6               -.103*I
```

```
I F3  -   F3                   I
I                              I
I F5  -   F5              -.197*I
I F4  -   F4                   I
I                              I
I F6  -   F6              -.127*I
I F4  -   F4                   I
I                              I


I F6  -   F6               .665*I
I F5  -   F5                   I
I                              I
```

```
-------------------------------------------------------------------------------
                          E N D    O F    M E T H O D
-------------------------------------------------------------------------------
```



```
MULTIPLE POPULATION ANALYSIS, INFORMATION IN GROUP  2

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STATISTICS FOR MULTIPLE POPULATION ANALYSIS

ALL EQUALITY CONSTRAINTS WERE CORRECTLY IMPOSED



GOODNESS OF FIT SUMMARY FOR METHOD = ML

INDEPENDENCE MODEL CHI-SQUARE        =    6483.604 ON   462 DEGREES OF FREEDOM

INDEPENDENCE AIC =    5559.604   INDEPENDENCE CAIC =    3252.394
       MODEL AIC =       2.240          MODEL CAIC =   -2120.194

CHI-SQUARE =      852.240 BASED ON     425 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

FIT INDICES
-----------
BENTLER-BONETT     NORMED FIT INDEX =      .869
BENTLER-BONETT NON-NORMED FIT INDEX =      .923
COMPARATIVE FIT INDEX (CFI)         =      .929
BOLLEN'S          (IFI) FIT INDEX   =      .929
MCDONALD'S        (MFI) FIT INDEX   =      .587
JORESKOG-SORBOM'S  GFI  FIT INDEX   =      .841
JORESKOG-SORBOM'S AGFI  FIT INDEX   =      .811
ROOT MEAN-SQUARE RESIDUAL (RMR)     =      .105
STANDARDIZED RMR                    =      .067
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .071
90% CONFIDENCE INTERVAL OF RMSEA  (        .064,          .078)


GOODNESS OF FIT SUMMARY FOR METHOD = ROBUST

ROBUST INDEPENDENCE MODEL CHI-SQUARE =    4658.009 ON   462 DEGREES OF FREEDOM

INDEPENDENCE AIC =    3734.009   INDEPENDENCE CAIC =    1426.799
       MODEL AIC =    -257.982          MODEL CAIC =   -2380.416

SATORRA-BENTLER SCALED CHI-SQUARE =    592.0179 ON     425 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

FIT INDICES
-----------
BENTLER-BONETT     NORMED FIT INDEX =      .873
BENTLER-BONETT NON-NORMED FIT INDEX =      .957
COMPARATIVE FIT INDEX (CFI)         =      .960
BOLLEN'S          (IFI) FIT INDEX   =      .961
MCDONALD'S        (MFI) FIT INDEX   =      .812
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .044
90% CONFIDENCE INTERVAL OF RMSEA  (        .035,          .053)


                       ITERATIVE SUMMARY

                   PARAMETER
ITERATION          ABS CHANGE         ALPHA                FUNCTION
    1                .580515        1.00000                7.28580
    2                .063811        1.00000                2.26813
    3                .026194        1.00000                2.14252
    4                .005520        1.00000                2.13643
    5                .001614        1.00000                2.13598
    6                .000456        1.00000                2.13594
```

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

WALD TEST (FOR ADDING EQUALITY CONSTRAINTS)
ROBUST INFORMATION MATRIX USED IN THIS WALD TEST
MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS

THE CONSTRAINTS COMPRISE EQUALITY OF THESE 22
PARAMETERS BETWEEN GROUP 1 AND GROUP 2:

```
E19,E19   E20,E20   E21,E21   E22,E22   E23,E23   E27,E27   E28,E28   E29,E29
E30,E30   E31,E31   E32,E32   E33,E33   E34,E34   E35,E35   E36,E36   E37,E37
E38,E38   E39,E39   E40,E40   E41,E41   E42,E42   E43,E43
```

		CUMULATIVE MULTIVARIATE STATISTICS			UNIVARIATE INCREMENT	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROBABILITY	CHI-SQUARE	PROBABILITY
1	E33,E33	.001	1	.970	.001	.970
2	E38,E38	.004	2	.998	.002	.963
3	E40,E40	.015	3	1.000	.011	.915
4	E20,E20	.086	4	.999	.071	.791
5	E39,E39	.167	5	.999	.081	.776
6	E28,E28	.304	6	.999	.137	.711
7	E35,E35	.674	7	.999	.370	.543
8	E31,E31	1.076	8	.998	.402	.526
9	E43,E43	1.535	9	.997	.459	.498
10	E36,E36	2.080	10	.996	.545	.460
11	E21,E21	2.887	11	.992	.807	.369
12	E22,E22	3.821	12	.986	.934	.334
13	E32,E32	4.892	13	.977	1.071	.301
14	E30,E30	7.250	14	.925	2.357	.125
15	E27,E27	9.621	15	.843	2.372	.124
16	E29,E29	11.386	16	.785	1.765	.184
17	E34,E34	14.188	17	.654	2.803	.094
18	E19,E19	17.689	18	.476	3.501	.061
19	E37,E37	21.361	19	.317	3.672	.055

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

WALD TEST (FOR DROPPING PARAMETERS)
MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS

		CUMULATIVE MULTIVARIATE STATISTICS			UNIVARIATE INCREMENT	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROBABILITY	CHI-SQUARE	PROBABILITY
1	2, F6,F2	.014	1	.907	.014	.907
2	2, F5,F2	.047	2	.977	.033	.856

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

LAGRANGE MULTIPLIER TEST (FOR RELEASING CONSTRAINTS)

CONSTRAINTS TO BE RELEASED ARE:

CONSTRAINTS FROM GROUP 2

```
CONSTR:    1   (1,V19,F1)-(2,V19,F1)=0;
CONSTR:    2   (1,V20,F1)-(2,V20,F1)=0;
CONSTR:    3   (1,V21,F1)-(2,V21,F1)=0;
CONSTR:    4   (1,V22,F1)-(2,V22,F1)=0;
CONSTR:    5   (1,V23,F1)-(2,V23,F1)=0;
CONSTR:    6   (1,V27,F2)-(2,V27,F2)=0;
CONSTR:    7   (1,V28,F2)-(2,V28,F2)=0;
CONSTR:    8   (1,V29,F2)-(2,V29,F2)=0;
CONSTR:    9   (1,V30,F3)-(2,V30,F3)=0;
CONSTR:   10   (1,V31,F3)-(2,V31,F3)=0;
CONSTR:   11   (1,V32,F3)-(2,V32,F3)=0;
CONSTR:   12   (1,V33,F3)-(2,V33,F3)=0;
CONSTR:   13   (1,V34,F3)-(2,V34,F3)=0;
CONSTR:   14   (1,V35,F4)-(2,V35,F4)=0;
CONSTR:   15   (1,V36,F4)-(2,V36,F4)=0;
CONSTR:   16   (1,V37,F4)-(2,V37,F4)=0;
CONSTR:   17   (1,V38,F5)-(2,V38,F5)=0;
CONSTR:   18   (1,V39,F5)-(2,V39,F5)=0;
CONSTR:   19   (1,V40,F5)-(2,V40,F5)=0;
CONSTR:   20   (1,V41,F6)-(2,V41,F6)=0;
CONSTR:   21   (1,V42,F6)-(2,V42,F6)=0;
CONSTR:   22   (1,V43,F6)-(2,V43,F6)=0;
CONSTR:   23   (1,F1,F2)-(2,F1,F2)=0;
CONSTR:   24   (1,F1,F3)-(2,F1,F3)=0;
CONSTR:   25   (1,F2,F3)-(2,F2,F3)=0;
```

```
CONSTR:   26   (1,F1,F4)-(2,F1,F4)=0;
CONSTR:   27   (1,F2,F4)-(2,F2,F4)=0;
CONSTR:   28   (1,F3,F4)-(2,F3,F4)=0;
CONSTR:   29   (1,F1,F5)-(2,F1,F5)=0;
CONSTR:   30   (1,F2,F5)-(2,F2,F5)=0;
CONSTR:   31   (1,F3,F5)-(2,F3,F5)=0;
CONSTR:   32   (1,F4,F5)-(2,F4,F5)=0;
CONSTR:   33   (1,F1,F6)-(2,F1,F6)=0;
CONSTR:   34   (1,F2,F6)-(2,F2,F6)=0;
CONSTR:   35   (1,F3,F6)-(2,F3,F6)=0;
CONSTR:   36   (1,F4,F6)-(2,F4,F6)=0;
CONSTR:   37   (1,F5,F6)-(2,F5,F6)=0;
```

UNIVARIATE TEST STATISTICS:

NO	CONSTRAINT	CHI-SQUARE	PROBABILITY
1	CONSTR: 1	.272	.602
2	CONSTR: 2	.232	.630
3	CONSTR: 3	.509	.476
4	CONSTR: 4	.001	.981
5	CONSTR: 5	1.259	.262
6	CONSTR: 6	.013	.909
7	CONSTR: 7	.379	.538
8	CONSTR: 8	.526	.468
9	CONSTR: 9	.420	.517
10	CONSTR: 10	1.250	.264
11	CONSTR: 11	1.148	.284
12	CONSTR: 12	.005	.943
13	CONSTR: 13	.410	.522
14	CONSTR: 14	1.042	.307
15	CONSTR: 15	.393	.530
16	CONSTR: 16	2.493	.114
17	CONSTR: 17	.675	.411
18	CONSTR: 18	.520	.471
19	CONSTR: 19	.683	.409
20	CONSTR: 20	1.028	.311
21	CONSTR: 21	.900	.343
22	CONSTR: 22	.000	.999
23	CONSTR: 23	.471	.492
24	CONSTR: 24	.306	.580
25	CONSTR: 25	.249	.618
26	CONSTR: 26	.719	.396
27	CONSTR: 27	.371	.542
28	CONSTR: 28	.839	.360
29	CONSTR: 29	.845	.358
30	CONSTR: 30	.430	.512
31	CONSTR: 31	2.433	.119
32	CONSTR: 32	.111	.739
33	CONSTR: 33	.678	.410
34	CONSTR: 34	4.567	.033
35	CONSTR: 35	.088	.766
36	CONSTR: 36	.014	.906
37	CONSTR: 37	.001	.981

	CUMULATIVE MULTIVARIATE STATISTICS				UNIVARIATE INCREMENT	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROBABILITY	CHI-SQUARE	PROBABILITY
1	CONSTR: 34	4.567	1	.033	4.567	.033
2	CONSTR: 31	7.183	2	.028	2.616	.106
3	CONSTR: 16	9.506	3	.023	2.323	.127
4	CONSTR: 28	11.370	4	.023	1.864	.172
5	CONSTR: 10	13.811	5	.017	2.441	.118
6	CONSTR: 5	15.388	6	.017	1.576	.209
7	CONSTR: 20	17.022	7	.017	1.635	.201
8	CONSTR: 13	18.632	8	.017	1.610	.205
9	CONSTR: 8	19.826	9	.019	1.194	.274
10	CONSTR: 32	20.993	10	.021	1.166	.280
11	CONSTR: 26	22.355	11	.022	1.362	.243
12	CONSTR: 15	23.695	12	.022	1.340	.247
13	CONSTR: 14	25.227	13	.022	1.532	.216
14	CONSTR: 33	26.418	14	.023	1.190	.275
15	CONSTR: 29	28.798	15	.017	2.381	.123
16	CONSTR: 24	29.780	16	.019	.982	.322
17	CONSTR: 7	30.716	17	.022	.936	.333
18	CONSTR: 12	31.735	18	.024	1.019	.313
19	CONSTR: 19	32.740	19	.026	1.005	.316
20	CONSTR: 9	33.445	20	.030	.705	.401
21	CONSTR: 1	34.060	21	.036	.615	.433
22	CONSTR: 18	34.478	22	.044	.419	.518
23	CONSTR: 11	34.921	23	.053	.442	.506
24	CONSTR: 17	35.245	24	.065	.325	.569
25	CONSTR: 30	35.646	25	.077	.401	.527
26	CONSTR: 35	35.880	26	.094	.234	.629
27	CONSTR: 37	36.096	27	.113	.215	.643
28	CONSTR: 21	36.351	28	.134	.255	.613
29	CONSTR: 2	36.446	29	.161	.095	.758
30	CONSTR: 22	36.511	30	.192	.065	.799
31	CONSTR: 3	36.554	31	.226	.043	.835
32	CONSTR: 4	36.618	32	.263	.064	.800
33	CONSTR: 25	36.644	33	.303	.026	.872
34	CONSTR: 6	36.650	34	.347	.007	.935
35	CONSTR: 27	36.659	35	.392	.008	.927
36	CONSTR: 36	36.670	36	.438	.011	.915
37	CONSTR: 23	36.678	37	.484	.008	.930

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

LAGRANGE MULTIPLIER TEST (FOR ADDING PARAMETERS)

ORDERED UNIVARIATE TEST STATISTICS:

NO	CODE		PARAMETER	CHI-SQUARE	PROB.	HANCOCK 425 DF PROB.	PARAMETER CHANGE	STANDAR-DIZED CHANGE
1	2	12	1, V39,F2	14.160	.000	1.000	-.187	-.183
2	2	12	2, V41,F5	11.196	.001	1.000	.203	.212
3	2	12	2, V28,F5	10.704	.001	1.000	-.221	-.154
4	2	12	2, V42,F5	10.444	.001	1.000	-.199	-.193
5	2	12	1, V38,F2	8.597	.003	1.000	.145	.155
6	2	12	1, V43,F2	6.924	.009	1.000	.136	.141
7	2	12	1, V23,F2	6.863	.009	1.000	-.148	-.138
8	2	12	2, V38,F2	6.625	.010	1.000	.127	.136
9	2	12	2, V34,F2	5.639	.018	1.000	.177	.114
10	2	12	1, V30,F2	5.607	.018	1.000	.169	.100
11	2	12	1, V34,F4	5.523	.019	1.000	.169	.114
12	2	12	2, V27,F4	5.424	.020	1.000	.159	.116
13	2	12	1, V19,F4	5.325	.021	1.000	-.155	-.149
14	2	12	2, V38,F1	5.244	.022	1.000	.128	.137
15	2	12	1, V31,F2	5.224	.022	1.000	.142	.092
16	2	12	1, V32,F2	4.784	.029	1.000	-.143	-.089
17	2	12	2, V36,F3	4.494	.034	1.000	-.127	-.092
18	2	12	1, V35,F1	4.374	.036	1.000	-.119	-.089
19	2	12	1, V38,F3	4.314	.038	1.000	.101	.109
20	2	12	2, V34,F4	4.125	.042	1.000	.158	.102
21	2	12	1, V33,F2	4.114	.043	1.000	-.165	-.112
22	2	12	2, V29,F4	4.020	.045	1.000	-.136	-.094
23	2	12	1, V35,F3	3.972	.046	1.000	.127	.094
24	2	12	1, V36,F1	3.787	.052	1.000	.110	.078
25	2	12	1, V36,F3	3.340	.068	1.000	-.114	-.081
26	2	12	2, V29,F5	3.133	.077	1.000	.118	.081
27	2	12	1, V28,F4	3.114	.078	1.000	.117	.083
28	2	12	2, V22,F2	2.814	.093	1.000	.083	.093
29	2	12	1, V34,F2	2.809	.094	1.000	-.112	-.075
30	2	12	1, V29,F4	2.733	.098	1.000	-.105	-.075
31	2	12	1, V35,F6	2.685	.101	1.000	-.093	-.069
32	2	12	2, V30,F5	2.682	.101	1.000	.125	.071
33	2	12	1, V40,F4	2.660	.103	1.000	-.080	-.081
34	2	12	2, V28,F3	2.635	.105	1.000	.114	.080
35	2	12	1, V33,F5	2.604	.107	1.000	.127	.086
36	2	12	1, V22,F5	2.561	.110	1.000	-.095	-.103
37	2	12	1, V38,F4	2.535	.111	1.000	.079	.084
38	2	12	1, V39,F3	2.453	.117	1.000	-.077	-.075
39	2	12	2, V42,F4	2.425	.119	1.000	-.081	-.078
40	2	12	1, V30,F4	2.424	.120	1.000	-.120	-.071
41	2	12	1, V36,F5	2.313	.128	1.000	.087	.061
42	2	12	1, V40,F3	2.266	.132	1.000	-.073	-.074
43	2	12	2, V29,F3	2.119	.145	1.000	-.101	-.069
44	2	12	1, V19,F3	2.083	.149	1.000	-.096	-.092
45	2	12	2, V43,F4	2.057	.152	1.000	.078	.079
46	2	12	2, V31,F4	1.950	.163	1.000	-.097	-.062
47	2	12	2, V36,F1	1.916	.166	1.000	.073	.052
48	2	12	2, V31,F6	1.872	.171	1.000	-.087	-.056
49	2	12	2, V30,F6	1.788	.181	1.000	.102	.059
50	2	12	1, V41,F5	1.756	.185	1.000	.086	.083
51	2	12	2, V38,F3	1.726	.189	1.000	.064	.069
52	2	12	2, V36,F2	1.696	.193	1.000	-.071	-.051
53	2	12	1, V29,F6	1.683	.195	1.000	.079	.056
54	2	12	2, V39,F2	1.641	.200	1.000	-.063	-.062
55	2	12	2, V29,F1	1.638	.201	1.000	.085	.059
56	2	12	1, V28,F5	1.626	.202	1.000	-.082	-.058
57	2	12	2, V22,F3	1.531	.216	1.000	.060	.068
58	2	12	2, V43,F1	1.530	.216	1.000	.075	.076
59	2	12	2, V33,F5	1.513	.219	1.000	-.097	-.065
60	2	12	1, V22,F4	1.504	.220	1.000	.065	.070
61	2	12	1, V35,F5	1.417	.234	1.000	-.068	-.051
62	2	12	1, V29,F5	1.393	.238	1.000	.072	.052
63	2	12	2, V42,F3	1.370	.242	1.000	-.060	-.059
64	2	12	1, V37,F3	1.324	.250	1.000	.084	.059
65	2	12	2, V33,F2	1.299	.254	1.000	-.094	-.063
66	2	12	2, V37,F3	1.279	.258	1.000	.076	.056
67	2	12	1, V43,F3	1.271	.260	1.000	.057	.059
68	2	12	1, V42,F1	1.271	.260	1.000	-.059	-.062
69	2	12	1, V21,F2	1.269	.260	1.000	.051	.054
70	2	12	2, V36,F5	1.262	.261	1.000	.059	.043
71	2	0	2, F1,F1	1.202	.273	1.000	-.122	-.122
72	2	0	1, F1,F1	1.202	.273	1.000	.122	.122
73	2	12	1, V21,F6	1.153	.283	1.000	-.053	-.057
74	2	12	1, V42,F5	1.143	.285	1.000	-.061	-.065
75	2	12	1, V32,F5	1.108	.293	1.000	-.066	-.041
76	2	12	2, V27,F5	1.085	.298	1.000	.070	.051
77	2	12	1, V41,F3	1.075	.300	1.000	-.055	-.053
78	2	12	1, V30,F6	1.046	.306	1.000	-.069	-.041
79	2	12	2, V43,F2	1.034	.309	1.000	-.056	-.057
80	2	12	2, V37,F6	1.027	.311	1.000	.060	.044
81	2	12	1, V19,F2	1.011	.315	1.000	-.068	-.065
82	2	12	1, V37,F5	1.007	.316	1.000	-.068	-.048
83	2	12	2, V23,F4	.993	.319	1.000	.047	.048
84	2	12	2, V27,F6	.992	.319	1.000	-.067	-.049
85	2	12	1, V22,F3	.986	.321	1.000	.052	.056
86	2	12	2, V32,F1	.950	.330	1.000	-.066	-.040

87	2	12	1, V27,F1	.944	.331	1.000	.071	.049
88	2	12	2, V30,F2	.940	.332	1.000	-.077	-.044
89	2	12	1, V27,F6	.936	.333	1.000	-.071	-.049
90	2	12	1, V39,F1	.906	.341	1.000	-.054	-.053
91	2	12	2, V23,F3	.901	.343	1.000	-.045	-.045
92	2	12	2, V37,F2	.889	.346	1.000	.057	.042
93	2	12	1, V21,F5	.886	.347	1.000	-.049	-.052
94	2	12	1, V37,F1	.824	.364	1.000	-.061	-.043
95	2	12	1, V41,F1	.796	.372	1.000	.054	.052
96	2	12	1, V32,F1	.782	.376	1.000	.055	.034
97	2	12	2, V40,F1	.758	.384	1.000	-.048	-.049
98	2	12	1, V37,F6	.755	.385	1.000	.058	.041
99	2	12	2, V27,F1	.745	.388	1.000	-.058	-.042
100	2	12	2, V30,F4	.716	.398	1.000	-.070	-.040
101	2	12	1, V42,F3	.712	.399	1.000	.038	.040
102	2	12	1, V31,F4	.668	.414	1.000	-.055	-.035
103	2	12	2, V37,F5	.665	.415	1.000	-.048	-.036
104	2	12	1, V41,F4	.664	.415	1.000	.044	.043
105	2	0	2, F2,F2	.662	.416	1.000	-.106	-.106
106	2	0	1, F2,F2	.662	.416	1.000	.106	.106
107	2	12	2, V38,F4	.628	.428	1.000	.039	.041
108	2	12	1, V30,F5	.609	.435	1.000	-.053	-.032
109	2	12	1, V23,F6	.609	.435	1.000	-.048	-.045
110	2	12	1, V20,F2	.601	.438	1.000	.038	.040
111	2	12	1, V33,F1	.569	.451	1.000	-.059	-.040
112	2	12	1, V20,F5	.567	.451	1.000	.042	.044
113	2	12	1, V28,F1	.547	.460	1.000	-.048	-.034
114	2	12	2, V37,F1	.536	.464	1.000	-.043	-.032
115	2	12	2, V33,F1	.528	.468	1.000	.057	.039
116	2	12	2, V32,F6	.477	.490	1.000	.047	.029
117	2	12	1, V35,F2	.474	.491	1.000	.040	.030
118	2	12	2, V42,F1	.471	.493	1.000	-.039	-.038
119	2	12	2, V28,F1	.428	.513	1.000	-.044	-.031
120	2	0	2, F3,F3	.422	.516	1.000	.058	.058
121	2	0	1, F3,F3	.422	.516	1.000	-.058	-.058
122	2	12	2, V39,F6	.419	.517	1.000	.038	.038
123	2	12	2, V19,F4	.410	.522	1.000	.037	.040
124	2	12	2, V35,F2	.404	.525	1.000	.038	.028
125	2	12	1, V31,F1	.391	.532	1.000	-.037	-.024
126	2	12	1, V22,F6	.390	.532	1.000	.036	.039
127	2	12	1, V40,F1	.384	.535	1.000	.035	.035
128	2	12	2, V20,F2	.375	.540	1.000	-.030	-.031
129	2	12	1, V21,F4	.370	.543	1.000	.027	.029
130	2	12	2, V21,F5	.367	.545	1.000	.032	.033
131	2	12	1, V27,F4	.359	.549	1.000	-.045	-.031
132	2	12	1, V33,F4	.358	.550	1.000	.052	.035
133	2	12	1, V20,F4	.342	.559	1.000	-.029	-.030
134	2	12	1, V34,F6	.336	.562	1.000	.037	.025
135	2	12	1, V32,F4	.331	.565	1.000	.041	.025
136	2	12	2, V20,F4	.311	.577	1.000	-.027	-.028
137	2	12	2, V30,F1	.307	.580	1.000	.042	.024
138	2	12	1, V38,F1	.296	.587	1.000	-.031	-.033
139	2	12	1, V36,F2	.288	.591	1.000	-.031	-.022
140	2	12	1, V36,F6	.288	.592	1.000	.030	.021
141	2	12	1, V19,F5	.278	.598	1.000	.040	.038
142	2	12	1, V19,F6	.277	.599	1.000	.039	.037
143	2	12	2, V20,F3	.271	.603	1.000	.025	.026
144	2	12	2, V42,F2	.256	.613	1.000	-.027	-.026
145	2	12	2, V36,F6	.255	.613	1.000	-.027	-.019
146	2	12	2, V28,F4	.253	.615	1.000	.035	.024
147	2	12	2, V41,F1	.248	.619	1.000	.027	.029
148	2	12	1, V23,F4	.245	.620	1.000	-.028	-.026
149	2	12	1, V33,F6	.243	.622	1.000	.038	.026
150	2	12	2, V41,F2	.240	.624	1.000	-.024	-.025
151	2	12	2, V35,F3	.234	.629	1.000	.031	.023
152	2	12	1, V27,F5	.214	.644	1.000	.034	.024
153	2	12	1, V23,F5	.209	.647	1.000	.029	.027
154	2	12	1, V41,F2	.203	.653	1.000	-.024	-.024
155	2	12	2, V21,F4	.199	.656	1.000	-.020	-.021
156	2	12	1, V40,F2	.191	.662	1.000	.021	.022
157	2	12	2, V23,F6	.185	.667	1.000	.023	.024
158	2	0	2, F6,F6	.185	.667	1.000	-.046	-.046
159	2	0	1, F6,F6	.185	.667	1.000	.046	.046
160	2	12	2, V21,F3	.170	.680	1.000	-.019	-.020
161	2	12	2, V19,F6	.167	.683	1.000	.027	.029
162	2	12	2, V22,F6	.165	.684	1.000	-.022	-.025
163	2	12	1, V40,F6	.161	.689	1.000	-.023	-.024
164	2	12	1, V43,F1	.160	.689	1.000	-.023	-.024
165	2	12	2, V27,F3	.157	.692	1.000	.028	.020
166	2	12	1, V30,F1	.151	.697	1.000	.027	.016
167	2	12	1, V39,F4	.150	.698	1.000	-.019	-.019
168	2	12	2, V33,F6	.137	.711	1.000	-.029	-.020
169	2	12	1, V29,F3	.136	.712	1.000	-.024	-.017
170	2	12	2, V41,F3	.135	.714	1.000	.018	.018
171	2	12	1, V43,F4	.132	.717	1.000	.019	.019
172	2	12	1, V28,F6	.125	.724	1.000	.023	.016
173	2	12	1, V34,F1	.116	.733	1.000	-.022	-.015
174	2	12	2, V34,F1	.112	.738	1.000	.024	.015
175	2	12	1, V20,F6	.108	.742	1.000	.018	.018
176	2	12	2, V41,F4	.104	.747	1.000	-.016	-.016
177	2	12	2, V28,F6	.099	.753	1.000	-.021	-.015
178	2	0	1, F4,F4	.092	.761	1.000	-.029	-.029
179	2	0	2, F4,F4	.092	.761	1.000	.029	.029
180	2	12	2, V43,F5	.086	.769	1.000	.019	.019
181	2	12	2, V20,F6	.080	.777	1.000	.016	.016
182	2	12	2, V39,F4	.075	.784	1.000	-.013	-.013
183	2	12	1, V42,F4	.075	.785	1.000	-.012	-.013
184	2	12	1, V32,F6	.075	.785	1.000	-.017	-.010
185	2	12	2, V39,F1	.071	.790	1.000	-.015	-.015
186	2	12	2, V43,F3	.069	.792	1.000	-.014	-.014
187	2	12	2, V35,F1	.068	.794	1.000	-.015	-.011
188	2	12	2, V32,F2	.062	.803	1.000	-.018	-.011

189	2	12	2, V22,F5	.062	.804	1.000	-.014	-.016
190	2	12	2, V40,F3	.059	.809	1.000	.012	.012
191	2	12	1, V22,F2	.057	.811	1.000	.013	.014
192	2	12	2, V31,F2	.052	.819	1.000	.015	.010
193	2	12	2, V40,F4	.052	.820	1.000	.011	.011
194	2	12	2, V35,F5	.050	.823	1.000	-.013	-.009
195	2	12	1, V38,F6	.049	.824	1.000	-.013	-.014
196	2	12	1, V27,F3	.049	.825	1.000	.017	.012
197	2	12	1, V34,F5	.048	.826	1.000	-.014	-.009
198	2	12	1, V28,F3	.047	.829	1.000	-.015	-.010
199	2	12	2, V40,F6	.046	.831	1.000	-.013	-.013
200	2	12	1, V43,F5	.046	.831	1.000	-.014	-.014
201	2	12	2, V34,F5	.045	.832	1.000	.015	.010
202	2	0	2, F5,F5	.044	.835	1.000	.020	.020
203	2	0	1, F5,F5	.044	.835	1.000	-.020	-.020
204	2	12	2, V22,F4	.043	.836	1.000	.010	.011
205	2	12	2, V21,F6	.037	.846	1.000	.010	.010
206	2	12	2, V29,F6	.037	.847	1.000	.013	.009
207	2	12	2, V19,F5	.037	.848	1.000	.013	.014
208	2	12	2, V34,F6	.036	.850	1.000	.014	.009
209	2	12	2, V33,F4	.034	.854	1.000	-.016	-.011
210	2	12	1, V31,F5	.030	.861	1.000	.010	.007
211	2	12	2, V31,F5	.030	.862	1.000	.011	.007
212	2	12	2, V23,F2	.030	.863	1.000	-.008	-.008
213	2	12	2, V32,F5	.027	.870	1.000	-.011	-.007
214	2	12	2, V19,F3	.027	.871	1.000	.010	.010
215	2	12	2, V23,F5	.023	.879	1.000	.008	.009
216	2	12	2, V31,F1	.022	.883	1.000	-.009	-.006
217	2	12	2, V38,F6	.021	.886	1.000	.009	.009
218	2	12	2, V19,F2	.019	.891	1.000	.008	.009
219	2	12	2, V20,F5	.012	.911	1.000	.006	.006
220	2	12	1, V37,F2	.008	.929	1.000	-.006	-.004
221	2	12	2, V32,F4	.007	.932	1.000	-.006	-.004
222	2	12	2, V40,F2	.005	.944	1.000	.003	.003
223	2	12	1, V20,F3	.005	.946	1.000	-.003	-.003
224	2	12	1, V23,F3	.004	.948	1.000	-.004	-.003
225	2	12	2, V39,F3	.004	.949	1.000	-.003	-.003
226	2	12	1, V31,F6	.003	.957	1.000	.003	.002
227	2	12	1, V42,F2	.003	.960	1.000	-.002	-.002
228	2	12	1, V29,F1	.002	.965	1.000	.003	.002
229	2	12	2, V21,F2	.001	.969	1.000	.002	.002
230	2	12	1, V21,F3	.001	.972	1.000	-.002	-.002
231	2	12	2, V35,F6	.000	.985	1.000	-.001	-.001
232	2	12	1, V39,F6	.000	.999	1.000	.000	.000

17-May-07 PAGE : 39 EQS Licensee:
TITLE: IV Measurement Model: sample1

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

MULTIVARIATE LAGRANGE MULTIPLIER TEST BY SIMULTANEOUS PROCESS IN STAGE 1

PARAMETER SETS (SUBMATRICES) ACTIVE AT THIS STAGE ARE:

PVV PFV PFF PDD GVV GVF GFV GFF BVF BFF

	CUMULATIVE MULTIVARIATE STATISTICS				UNIVARIATE INCREMENT			
							HANCOCK'S SEQUENTIAL	
STEP	PARAMETER	CHI-SQUARE	D.F.	PROB.	CHI-SQUARE	PROB.	D.F.	PROB.
1	1, V39,F2	14.160	1	.000	14.160	.000	425	1.000
2	2, V28,F5	25.606	2	.000	11.446	.001	424	1.000
3	2, V41,F5	36.765	3	.000	11.159	.001	423	1.000
4	1, V23,F2	43.934	4	.000	7.169	.007	422	1.000
5	2, V27,F4	50.837	5	.000	6.903	.009	421	1.000
6	1, V43,F2	57.297	6	.000	6.460	.011	420	1.000
7	2, V38,F2	63.286	7	.000	5.990	.014	419	1.000
8	2, V38,F1	70.712	8	.000	7.425	.006	418	1.000
9	1, V19,F4	76.601	9	.000	5.890	.015	417	1.000
10	1, V30,F2	82.287	10	.000	5.686	.017	416	1.000
11	1, V31,F2	92.272	11	.000	9.985	.002	415	1.000
12	1, V34,F4	99.885	12	.000	7.614	.006	414	1.000
13	2, V34,F2	108.106	13	.000	8.221	.004	413	1.000
14	2, V36,F3	112.655	14	.000	4.549	.033	412	1.000
15	1, V35,F3	118.626	15	.000	5.971	.015	411	1.000
16	2, V34,F4	123.259	16	.000	4.633	.031	410	1.000

LAGRANGIAN MULTIPLIER TEST REQUIRED 329517 WORDS OF MEMORY.
PROGRAM ALLOCATES ******** WORDS.
1
Execution begins at 17:46:36
Execution ends at 17:46:45
Elapsed time = 9.00 seconds